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Concerning the Toll Question—Banks' Telephone Survey

From one of the Independent telephone leaders comes an interesting letter commenting on the two important questions mentioned editorially in our November 2nd issue—Bell minority interests in local companies and a fair division of toll revenues.

The latter issue provoked the more comment, probably because there is no difference of opinion as to the propriety of the Bell organization obtaining minority interests in such companies, in view of the Bell agreement that it would acquire no more Independent properties.

This Independent leader—who has been in the telephone business more than 30 years and is experienced in all its phases—points out that it would be unwise for the Independent group to complain because the Bell long lines department has reduced toll rates, as it would, in effect, be criticising and opposing progress in the public interest.

As showing further that he is fair and open-minded, our correspondent says that the Bell organization should be commended for its toll expansion program.

* * * *

"I think, however, that a larger share of the toll receipts should properly go to the local companies," continues his letter, "but as pay for services rendered rather than to give them some of the profits made by the Bell in other directions.

"The importance of the terminal station in every toll connection is bound to be recognized more and more as time goes on, and the revenue going to the terminal station will be graded according to the size of the terminal city and the value of the terminal investment. A lot of study is being given this question and relief is already beginning to come, especially in the larger cities where the investment is greater.

"I feel that opposing minority purchases and urging Independent companies to keep their toll properties are the right courses to pursue, and that they will be approved by every one sincerely concerned in the best interests of the entire telephone industry."

* * * *

There is no questioning the common sense of the opinions just quoted. From the public there has come a favorable reaction to the telephone industry because of the reductions in toll rates, and the Independent group has no intention of risking adverse criticism by opposing such reductions.

Nobody has ever accused Independent telephone companies of conspiring to charge the public higher rates than the Bell companies. In fact, the shoe has been on the other foot. The growth of Independent companies from the start was due to their ability to furnish telephone service at less cost and with the greater promptness which the public demanded.

The Independent group is glad to see toll service expanding, with lower cost to the public, but insists that the local companies are entitled to a fair share of the toll revenues so they can cooperate efficiently in this expansion. Both telephone groups must work together if the best results are to be obtained, and the public will understand that all factors connected with the service must be treated fairly.

* * * *

If this cooperation within the industry cannot be secured, the natural procedure would be to seek arbitration by some regulatory body. Some hold the opinion that the new federal communications commission, provided for by the Couzens bill, might supervise the relations between wire companies handling toll business; but, unless this body is to invade the jurisdiction of the state commissions, such control would affect only interstate service. The bulk of telephone calls is within the state.

It is the opinion of the conservative men in the telephone field that the question can be settled more satisfactorily within their own ranks and without appealing to any governmental agency. They believe this would be more productive of harmony and constructive results.

Bankers on Telephones.

Interesting comments on the telephone business are found in a report made to the recent convention of the American Association of Investment Bankers by its committee on public service securities. After discussing the situation in the electric power and light, gas, and street railway fields, the committee reviews the conditions in the telephone industry in a style most

complimentary. In part, the committee says:

"Established and recognized policies have resulted in exceptional stability of telephone securities. Mergers of Independent companies have not progressed to the same extent as in some of the other utilities, one important reason being that the technical aspects of the (telephone) business do not lend themselves readily to quantity production.

"In the electric light business, an existing wire need only to be tapped to serve a new customer, for the existing plant is ready to serve, whereas each new telephone customer must have a new connection all the way back to the central office, with its increase of all switching arrangements by one.

"To attempt to develop a service to be an actual competitor of the Bell system would be so difficult, as well as contrary to economic sanity, that it is not likely to be successfully attempted. To operate in the Independent field as a basis for mergers is, therefore, relatively unattractive, when neither public advantage nor the rewards of effort measure with other fields of endeavor."

* * * *

The committee also speaks of the rapid increase in the demand for additional telephone service, and the steady improvement in facilities and service methods, and then makes this significant statement:

"This means that, at a time when business is increasing more rapidly than ever before, the plant is being replaced more rapidly. This is particularly interesting in the present day of radio expansion, for it is a clear indication of the belief of the far-seeing experts in the telephone field that this new invention is but an adjunct of existing telephone service and offers no threat of depreciating present investments."

COMING CONVENTIONS.

Illinois Telephone Association, Springfield, Hotel Abraham Lincoln, November 20 and 21.

Canadian Independent Telephone Association, Hotel Carls-Rite, Toronto, November 26 and 27.

South Dakota Telephone Association, Watertown, Hotel Lincoln, January 14, 15 and 16.

Oklahoma Utilities Association, Tulsa, March 11, 12 and 13.

Nebraska Telephone Association, Omaha, Hotel Paxton, February 11, 12 and 13.

Pennsylvania State Telephone & Traffic Association, Penn-Harris Hotel, Harrisburg, May 13, 14 and 15.

The Stock Crash.

Analyzing the effects of the stock market collapse continues to be the main topic of discussion in most business and financial circles. One angle of the situation has to do with its effect on the customer ownership campaigns of some of the public service companies, and in the opinion of some utility financiers that effect will be "not so good."

The sale of utility stocks to buyers of service is designed not only to raise capital for the company but to win the good will and support of the public. Thanks to the stock crash that good will is likely to shrink along with the stock prices carried down in the October slump.

Fortunately for the telephone industry, this condition does not prevail in that field to the extent that it does in the electric power and gas fields. As to the latter situation, Floyd W. Parsons, editor of the Gas Age-Record, frankly says:

"Probably the most important lesson for those of us in the gas business is the seeming futility of our present plans for building up a highly desirable state of public ownership for utility stocks. Never has any program fallen more flat. In recent weeks, our public service corporations have made tens of thousands of enemies—not friends.

"Consumers of gas and electricity who purchased the stocks of their local companies at prices two or three times those now prevailing, must feel a certain bitterness toward the managements of the companies that invited them into such hazardous investments. . . . Customer ownership, as it is now carried on in most places, is a highly questionable practice, one that must now be placed on trial to prove its worthiness."

* * * *

As a matter of fact, bona fide investors in good utilities who paid reasonable prices for a sure yield, are safe. It is the speculators who bought on margin to get even higher prices that got pinched, and they hardly qualify as "customer owners."

Grounding With Driven Electrodes

Application and Requirements of Grounds Both in Communication and Power Transmission and Distribution Fields—Various Means of Improving Grounds—Address Given at Plant Division Conference of Annual National Convention

By Rolf Selquist,

Electrical Engineer, Copperweld Steel Co., Glassport, Pa.

Probably the most important application of grounds, both in the communication and the power transmission and distribution fields, is for protection, either for protecting and increasing the reliability of the circuits on which they are used, or for protecting life and other property. This use while not new is nevertheless, of more interest now than ever before; mainly because too often in the past grounds have not been adequate for the purpose for which they were intended.

The earth may be considered as a conductor which has practically an unlimited capacity, and on account of its size, a negligible resistance; and any conducting material electrically connected to the earth will tend to have the same potential as the earth. The only limitation is in the electrical connection, or as it is commonly known, "the ground." The very simplicity of a ground has been one reason why it has not received the consideration which it should have.

Like most other electrical connections, a ground should have low resistance, be mechanically secure, and permanent. It is possible to make grounds to meet almost any practical requirement. There are, however, economic limitations. For some installations, a fairly large amount of money may be invested to secure good grounds, while in others only limited expenditures are justified. However, in all cases it is desirable to have the best ground obtainable for the amount invested.

Resistance.

The first requirement for a ground connection is low resistance, and the lower

the resistance the better protection it affords. In many instances, such as lightning arrester installations, the resistance of the ground is probably the controlling factor in the protection afforded by this equipment.

It is important, therefore, to know just

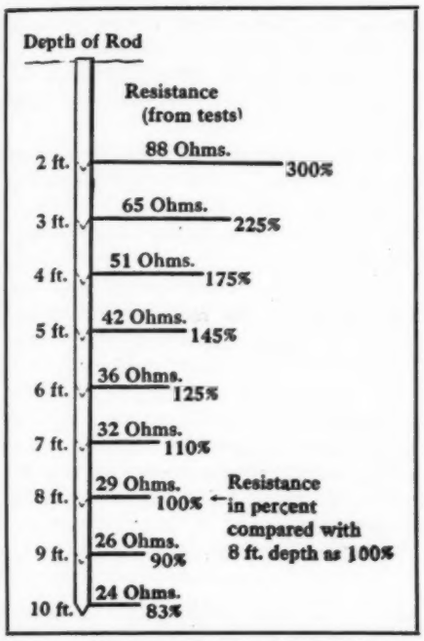

Depth of Rod
Resistance (from tests)
2 ft. 88 Ohms. 300%
3 ft. 65 Ohms. 225%
4 ft. 51 Ohms. 175%
5 ft. 42 Ohms. 145%
6 ft. 36 Ohms. 125%
7 ft. 32 Ohms. 110%
8 ft. 29 Ohms. 100%
9 ft. 26 Ohms. 90%
10 ft. 24 Ohms. 83%
Resistance in percent compared with 8 ft. depth as 100%

Fig. 1. Comparative Ground Resistance for Different Lengths of Rods in Uniform Soil.

what are the factors which determine the resistance of grounds; are they depth, size of electrodes, material, contact area, soil, etc.? It is with these questions in mind that a number of investigations have been made to determine the relation between the physical characteristics of driven grounds and their electrical properties.

The most important information obtained in these investigations is that the resistance of the ground connection is largely determined by the conductivity of the soil surrounding the electrode. This conductivity is dependent on the soil ingredients and the moisture content. It has also been shown that within practical limits the diameter and shape of the electrode, as well as its contact area, only slightly affect the resistance at a given location and condition.

This is in contradiction to the earlier ideas on grounding when the contact area of an electrode was considered the important factor. We now know that the contact resistance between a driven ground and soil is negligible, and that a large electrode area is in itself no reliable indication of the adequacy of a ground.

The important effect of the soil within a five to six-foot radius of the electrode can be easily demonstrated. For example, consider a 5/8-inch by 8-foot driven ground which when installed has a resistance of 30 ohms. If a second electrode is driven immediately adjacent to the first and connected in parallel, there is only slight reduction in resistance, although the contact area has been doubled; whereas, if the second rod is driven at a distance of four to six feet from the first electrode, the resistance of the two in parallel is reduced about 40 per cent or to approximately 18 ohms.

With the knowledge that it is the soil which determines the resistance of the ground, what is the desirable length and diameter for a driven electrode?

Length.

Every driven ground should be long enough to reach permanent moisture. They should not be less than six feet in length, and a minimum of eight feet is preferable. Longer rods may be used at times, but in most locations an eight-foot length reaches permanent moisture, and the use of a longer rod is not commensurable with improvements obtainable by other means.

The variations in resistance with depth are shown in Fig. 1. With the first few feet, the benefit of additional depth is very pronounced, but the changes in resistance for depths greater than eight feet are small.

In a few cases, particularly at station grounds, longer rods than 10 feet may be used; in many instances, 20-foot rods being employed. The value of the other equipment justifies the use of every available means for obtaining the lowest resistance possible, but even here twice as many rods of half the length may furnish the better ground.

Diameter.

The diameter of a driven ground should be no larger than actually required for driving purposes. Larger diameters add but little to the electrical efficiency of the ground. This is graphically shown in Fig. 2. A ½-inch rod is satisfactory in most soils. Rarely are ground rods required larger than 5/8-inch or ¾-inch, even in very hard soils except, perhaps for lengths of 12 feet or more.

The resistance of grounds will not be the same at all times. The moisture content of the soil differs, and there is also a noticeable effect due to variations in temperature. Fig. 3 shows the variations which may be expected.

After installing a driven ground, or any ground in fact, there is only one way to determine the protective value and that is by measuring its resistance. The resistance of every protective ground should be measured. Excellent portable ground resistance measurement instruments are now obtainable with which tests can be easily and quickly made. Exact determinations are not necessary, but it is important to know whether the resistance is of the order of 15 ohms, 50 ohms, or 200 ohms.

Where a driven ground has a resistance in excess of the desirable maximum value, there are several ways of improving this ground.

Multiple Driven Grounds.

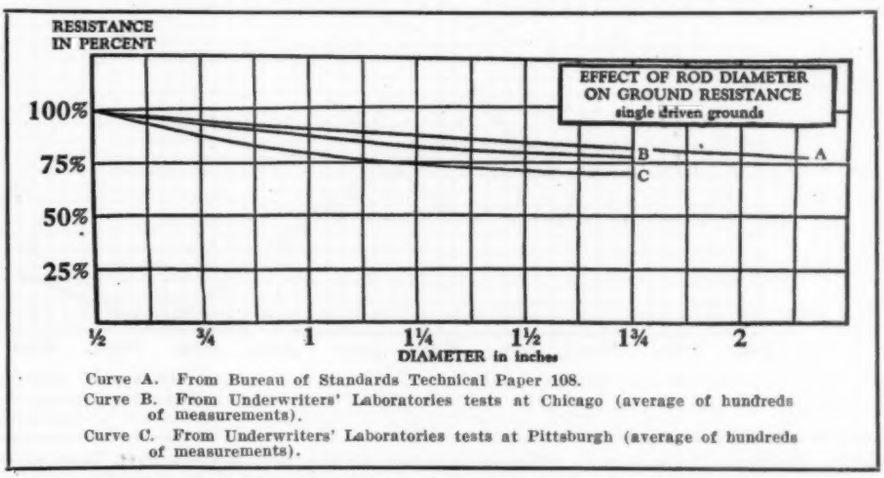
The simplest and generally the most practical method is to drive another rod six to ten feet away from the first rod and connect the two in parallel. As shown in Fig. 4, this reduces the resistance of the ground approximately 40 per cent. Additional rods may be used, and these will decrease the resistance almost in proportion to the number of rods used.

Salt Treament.

Another means of improving a ground is by lowering the resistivity of the soil surrounding the rod. This can be accomplished by salt treatment of the soil, which in high resistance soils often results in reduction of 50 to 70 per cent. The disadvantage of salt treatment is that salt is gradually carried away by the water flowing through the soil and must be renewed periodically. However, where supervision and regular inspection of grounds is possible, this method is very satisfactory.

Tests made during the last few years show that salt applications are beneficial for at least one to two years; and while the salt is partially carried away by water, there also appears to be some permanent improvement, especially after the salt has been renewed several times.

One method of treating soil is to dig a basin about the ground rod, approximately two feet in radius and one foot deep. About



Curve A. From Bureau of Standards Technical Paper 108.
Curve B. From Underwriters' Laboratories tests at Chicago (average of hundreds of measurements).
Curve C. From Underwriters' Laboratories tests at Pittsburgh (average of hundreds of measurements).

Fig. 2. Effect of Rod Diameter on Ground Resistance, With Single Driven Grounds.

60 pounds of coarse rock salt, such as ice cream salt, is placed in this basin and flooded with water until the surrounding earth is well saturated. The basin is then refilled with soil.

In cities where paving clearance may interfere with the basin method, a hollow tile or pipe may be placed around or near the rod, as a receptacle for the salt. This latter has the advantage of enabling the inspector or tester to easily renew the salt.

Reliability.

(1) Making installations permanent.

Ground rods should be installed as permanently as possible, since a ground after once installed is generally accepted as adequate and maintenance is too often neglected. Grounds are often relied upon for electrical protection for almost an indefinite period. Only long-life materials of ample size and ruggedness to withstand the effects of corrosion and possible mechanical abuse should be used.

For a good ground, the soil must contain moisture and an electrolyte; the latter usually being a soluble salt of some kind. Moisture and salt are corrosive agents and will, therefore, affect the life of the electrode.

A wide variation in the corrosive action of different soils is to be expected. In general, however, corrosion will be greater in grounds which have the best electrical characteristics, since the latter is an indication of high moisture and salt content.

The electrical connection between the grounding wire and the driven ground is especially important. A high resistance connection, or an insecure contact, may alone nullify the benefits of the grounding and create a hazard instead of a protection.

While a certain investment must be made to secure a proper ground, the amount of money spent is not always an indication of the value of the ground. Both material and installation costs must be considered. The large saving in labor cost has promoted the general use of the driven electrode, but considerable money may still be wasted in using larger diameter electrodes than necessary.

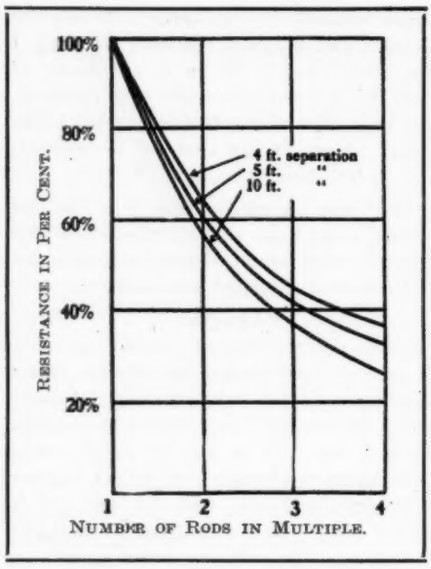


Fig. 4. Reduction in Resistance Obtained With Two or More Driven Grounds Connected in Multiple, Compared With the Resistance of One Rod.

Costs of electrodes increase approximately as the square of the diameter. Further, larger diameter rods cost more to install. Where one man with a four-pound hammer might install a ½-inch rod, it takes two to three men fully twice as long to drive a two-inch electrode, even when armed with a 14-pound sledge.

In order to have the most for the money invested, use diameters as small as meet the driving requirements. Two driven grounds of small diameters, connected in parallel, will cost less than a single large ground and will be more efficient.

Summary.

To secure the most effective and economical installations with driven grounds, the practical items to consider are:

1. Select a length which will reach the permanent moisture level, usually eight feet.

2. Select a diameter of driven ground as small as its driving qualities will permit for the particlar soil.

3. Measure the resistance of all protective grounds.

4. If a single driven ground does not show an adequately low electrical resistance for the purpose intended, proceed progressively in the following order.

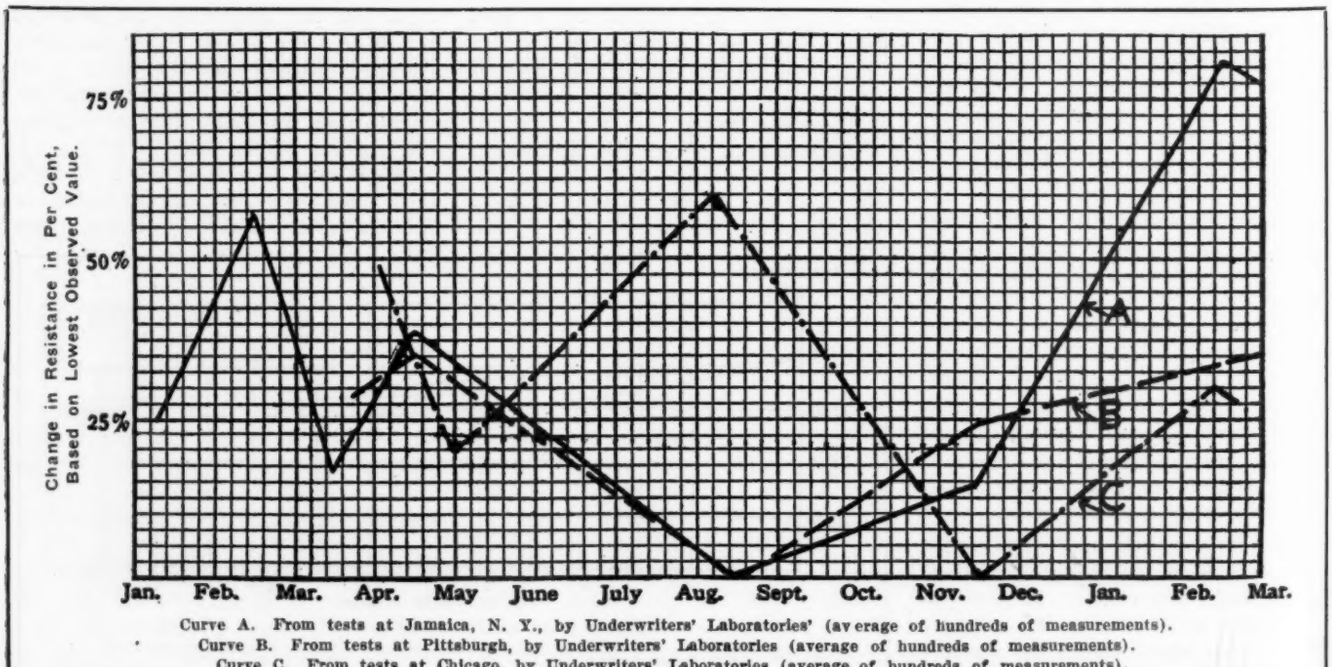
(a). Drive a second rod, separated at a distance of from five to ten feet, and connect them in parallel.

(b). Drive additional rods as may be justified from the standpoint of electrical necessity and cost.

(c). Use salt treatment of the soil.

Active Construction by Government in Alberta, Can.

The Alberta Government Telephone System has been carrying on an active construction program this season, reports U. S. Asst. Trade Commissioner C. E. Brookhart, Winnipeg, Man., Can. A total of about 2,300 miles of new copper wire lines will have been added to the system in the province at the close of the construction season. Most of this new work has been done on toll lines, totaling over 1,850 miles.



Curve A. From tests at Jamaica, N. Y., by Underwriters' Laboratories' (average of hundreds of measurements).
Curve B. From tests at Pittsburgh, by Underwriters' Laboratories (average of hundreds of measurements).
Curve C. From tests at Chicago, by Underwriters' Laboratories (average of hundreds of measurements).

Fig. 3. Seasonal Variations in Resistance, Single Driven Grounds, 6½ Feet Deep, Caused by Natural Conditions Only; Averages of Hundreds of Measurements.

From New York Traffic Conference

Chief Operators at Up-State Association of New York Convention, in Their Papers at the Traffic Conference, Tell Operators to Avoid Special Operating Practices, Unnecessary Switchboard Markings and Granting Special Privileges

Avoid Special Operating Practices.

By Miss Sidney McCarthy,
Chief Operator, Rochester Telephone Corp., Canandaigua, N. Y.

We formerly had in our office, requests for temporary transfer to another telephone for a short period of time—an hour, two hours, or longer—with a very needy reason assigned for it. We transferred from memory, being very careful to explain that our company could not take any responsibility and we would do so only if we could remember. Apparently we had fine memories.

The practice grew. We decided to give it a little special study, for we were rather skeptical that so much emergency existed in our midst. We were surprised, and I might say amazed, to find that we had been a little generous. The time it took to do this, summed up, amounted to considerable and, too, it was felt we were taking considerable responsibility that we should not assume.

The condition was discussed at one of our chief operators' meetings, and it was pointed out that such a practice should be discouraged; that we should not accept a transfer of calls for less than 24 hours, except in cases of emergency. So, from that time on, all requests for temporary transfers have been courteously declined with an explanation of the reason why we cannot accept such transfers. Best of all, we have experienced no difficulty in having our subscribers accept our explanation. We are now accepting only emergencies and most of us readily recognize them as such.

We have in our small city a colony of doctors who are summer residents on the lake and are in their city offices only part of the day. A long-standing conviction existed with these doctors that the telephone company would take care of them—if their city telephone did not answer, the operator would transfer to the lake residence; a heavy tax on all operators' memories. You'll admit lake traffic at the best is no small task, as anyone who has ever handled it well knows.

Then why and how did we saddle ourselves with all this extra work? What's the matter with the doctors paying for it instead of the telephone company? We cannot blame the doctors for accepting experienced, businesslike help when they get it for nothing, can we?

Then who is to blame? How did we get into it? How can we get out of it? You may say, as some chief operators did with whom these transfers were discussed: "Well, it started long before I took charge and our subscribers are so hard to handle." Well, so are some of ours. Why stay in the rut? "Handle them"; if necessary, ask for help—from your traveling chief operator who has plenty of good ideas and is willing and ready to pass them along—from your commercial manager; if he does not see the idea as a good and necessary one, keep hammering it at him until he does. Cooperation and response from our commercial managers has been the experience of most of us, I believe.

We had a group of undertakers who were possessed of this same idea. We have taken care of them, with the assistance of our commercial man, with an extra listing to call their residence when their office telephone does not answer.

Usually the doctor comes first and then the undertaker—but it's the other way round with us and we are trying to find a satisfactory way for all concerned. We have put the facts up to our commercial department with the request that a listing or clearance house, as it were, be obtained at a small expense to these doctors.

Most of our commercial men belong to the Rotary or the Exchange Club where they can get good ideas across; and there must be in every city, town, or hamlet, some cripple or shut-in perhaps who would gladly avail themselves of this opportunity to take these calls.

Another bugbear which we all have with us is the holding of local telephone lines for long periods of time with requests to the chief operators to ask for the release of the line. In our smaller exchanges we are usually familiar with the chief offenders. The request is usually met with courtesy and compliance, but once in a while we get one that surely takes the patience of Job and the experience of a diplomat. When I get my doctors settled, this comes next for special study. What do you do? How do you meet it? Give us some of your experiences, please. Pass your ideas along.

I asked a chief operator of a neighboring office what requests for special operating practice were her biggest annoyance. She replied, "temporary transfer of numbers" first, and, "city offices asking for nearby telephones," next. If the operators did not know a nearby telephone number, or, for any reason did not comply, the city office would call the Post Office, or the Western Union, or the Chamber of Commerce, and ask them for this information, in many cases asking the employes to look in the city directory. Later these subscribers would call the local chief operator and complain. I advised her to call the chief operator of the city office concerned and tell her that this was a nuisance to her people and ask for help and cooperation.

Avoid Unnecessary Switchboard Markings When Possible.

By Miss Ruth Hamer,
Chief Operator, Wayne Telephone Co., Palmyra, N. Y.

We know the kind of atmosphere one feels when entering an office that is neat, orderly and well kept, with a place for everything and everything in its place. Here, one feels that instructions are followed out and service is to be found up to the standard. So it is when our eyes behold a switchboard entirely clear of all that is not necessary to giving good service.

The switchboard should not be crowded with a collection of directories, route books, notices and items of personal property, as all these things must have a place of their own. In many offices a directory cabinet is provided, which will hold nearly all of the large directories, leaving the smaller ones to be grouped together in one or more binders.

Tickets should be neatly arranged in the ticket compartments and only those of immediate use left on the switchboard. C. L. R. bulletins should be placed near the operator; also bulletins containing all number changes and disconnected numbers.

The switchboard is the vital point of telephone business and it is, therefore, necessary that it be taken care of properly. One bad cord, one dirty plug, or a broken key, may cause several complaints. Cords should be kept in good condition and immediately capped and reported when found out of order.

The calculagraph should be conveniently placed and frequently checked with the Western Union time so that it is always accurate. New ribbons should be put in as soon as needed so that a legible stamp will always be possible. The toll lines should be within easy reach of the operators and properly designated.

I believe that today most of the smaller offices are getting away from irregular operating practices, and, so, we should not have on the switchboard such notices as doctors' hours, train schedules and some subscriber's request for an early morning awakening. Frequently, though, offices have notices of changes or re-

movals and new telephones posted in every available place on the face of the switchboard.

These should all be taken care of in the proper manner and recorded in the directory changes and on the switchboard bulletins. It should not be necessary for the operator to tax her memory in giving this information out to subscribers. So many times we hear some operators say, "What's the use of switchboard markings? The girls can remember them, and, besides, we can post a notice."

As a ship on a sea would surely be lost without a compass to guide its course, so would we, as weavers of speech, be lost without the markings of our switchboard to guide us. No switchboard, no matter how neat, would be complete without its markings; and it is important that these markings be clear and in bright colors, for they attract the attention of the operator more quickly than the duller colorings would.

Each jack in the switchboard is divided into four quadrants, distinguished as the *J-M-R-W* quadrants. The term, "quadrant marking," is used to designate a narrow strip painted on the jack in such a way as to indicate a particular condition pertaining to the party-line station corresponding to the quadrant. "Underlining" means a horizontal line painted below the jack. Some switchboards use small colored pins or pegs instead of paint for marking quadrants.

A red quadrant indicates a vacant station on a party line. A yellow quadrant indicates a change in the status of the station and means a reference to the bulletin. All number changes and disconnections are shown on these bulletins and reference is made to them when there is a yellow marking. Four-party lines are indicated by lamp caps with one black horizontal line. Four-party lines on which all stations are working are designated by a green underline. P. B. X. trunks are underlined by red or white paint, alternating.

Black and white signal plugs are also used to indicate non-working line and temporary transfer numbers.

There are other special markings which are too numerous to outline here, but which are of no less importance. If we are to give service that will please and satisfy our subscriber, we must all have a knowledge of the standard markings.

System in our offices has its own mental effect upon the mind of the operator, and she receives the impression of orderliness which is reflected in the way she handles her work through the day. An untidy, disorderly switchboard has the opposite effect upon the operator. If there is no order about the work, it is eventually reflected in the service.

Taking all these things into consideration, we can easily see how service and system are closely related, and how much easier our work will be if system is the rule of our offices.

Avoid Granting Special Privileges.

By Mrs. Elizabeth Phillips,

Chief Operator, Rochester Telephone Corp., Geneseo, N. Y.

"Avoid Granting Special Privileges" is a topic which is of considerable importance and could be discussed at great length. However, there is a paper on the program entitled "Avoid Special Operating Practices," which, no doubt, will be in connection with local work so I will attempt, as briefly as possible, to outline a few of the irregular conditions which have developed in connection with long distance work.

It is only natural for the chief operator of a small exchange to desire to comply with requests made by her subscribers and on many of these requests there is no authorized routine covering the condition.

It is essential for a chief operator to realize that in order to have her office conducted efficiently and economically it is necessary to pause occasionally and consider just how much extra work these irregular practices burden her traffic force. After giving the matter some thought and fully realizing that as representatives of a public utility whose keynote is courteous service, "Service with a Smile" in voice and manner, we have at all times made a real effort to give the best possible telephone service, and sometimes have carried it too far.

For instance, many of us have permitted our subscribers to entertain the thought that we could, with no difficulty whatever, notify them at the termination of the three or five-minute interval on all outgoing calls and incoming collect calls, without their first notifying the operator, at the time the call was placed, that such was their desire. They just want to leave a standing order and are inclined to be indignant when we explain we are unable to do this unless notified at the time each call is placed.

Subscribers also frequently notify us that they are expecting an incoming toll call but, due to some unforeseen reason, are obliged to leave their office and request us to make an effort to reach them at one or more designated locations. In the past we have done this without question; and even now we usually comply with the subscriber's request, after first explaining that, in the event of failure to comply, the company can assume no responsibility.

Many of our subscribers, especially business men, are inclined to be impatient when given a report of delay on an outgoing toll call, stating that they are too busy to be called to the telephone unless the party they want is ready to talk. We try to refrain from calling them too frequently when they mention at the time of placing the long distance call that they don't want to be called until their party is on the line. However, as a rule, the subscriber, rarely, if ever, notifies us and as a result we usually run into difficulty.

Another irregularity we have encountered is that of a distant point reporting "ready to talk" to a particular person whose station is reached through our office, but after making a thorough check we are unable to locate an "out" ticket. Usually this means considerable waste of circuit time and that someone is trying to get a free connection. Occasionally they succeed, especially if this occurs during a shortage of force, as at night; or, if a more or less inexperienced operator handles the call.

In one or two instances we have been able to trace this practice directly to an employe. Needless to say sufficiently drastic measures were used to stop the misusage of toll lines at the source. As a result of the investigation, it seems as though other offices may have had similar experiences and it would be interesting to know what methods were employed to overcome them.

There are many other conditions which could be written about in this paper, but I am sure most of you have problems in connection with toll irregularities to discuss, so I will briefly explain what we are doing to overcome the dissatisfaction resulting in our effort to break away from the oldtime practice of doing our subscriber's secretarial work for him.

We send a representative fully equipped with a knowledge of toll and office routine, to call on the subscriber who makes unusual requests, to have a heart-to-heart talk with him, and to explain our standard operating practice—pointing out to him how impossible it would be to grant him privileges without granting them to all.

With this explanation we usually win the subscriber over to the standard method and if not at the time of the call, we make it a point to follow up until he is thoroughly satisfied.

Regular Telephone Service Between Australia and England.

Following recent successful radiotelephony experiments between Australia, England, and other countries, permitting several hours of two-way conversations daily, the early initiation of a general public service was predicted in Sidney, N. S. W., Australia, on November 10.

Convention Dates of Canadian Association Announced.

The Canadian Independent Telephone Association will hold its 24th annual convention, Secretary Alph Hoover, of Markham, Ont., states, at the Hotel Carls-Rite, Toronto, Ontario, Canada, on Tuesday and Wednesday, November 26 and 27.

Here and There in Telephone Work

Roller Skates Speed Up Operators in Handling Switchboard Work.

Speeding up telephone service by sailing over battleship linoleum on roller skates during the wee small hours of the morning is great sport, declare the night telephone operators of the Pacific Telephone & Telegraph Co. at the Dunkirk, Fitzroy, and Drexel exchanges in Los Angeles, Calif., where they are trying out this novel

Los Angeles Night Operator Who Utilizes Roller Skates as Aid in Answering Calls Quickly on Different Switchboard Positions.

method of transportation along the switchboards.

Negotiating dizzy curves, four-wheel brake stops, and snappy pickups, coupled with an amazing lack of forced landings, seems to be all in the night's work. The Misses Ora Dearing, Cora Stoneking, and Marcella Moyer are whizzing around at the Dunkirk and Fitzroy offices, and Miss Esther M. Douglas and Willa Armstrong compose the rolling duet in the Drexel headquarters.

After 10:30 p. m. the few night calls that come in are intercepted by a small group of girls on foot known as "patrol" operators. These girls plug into the switchboard and cause the calls to be concentrated at a position where a group of regular operators is seated to complete the calls. This telephone traffic at night is very scattered and straggling, and the patrol girls find that skating is faster and less tiring than hiking to reach the isolated signals here and there along the great switchboards. These are the technical reasons behind the formation of the midnight telephone skating rink, although it is rumored that its sporting appeal has something to do with its popularity.

Only those girls who were proficient in skating earlier in life are allowed to try it in the operating room. Skating periods are divided into about one hour each so as to avoid fatigue. Fiber rollers are used on the skates provided by the telephone company. Critical study is being given the new method of answering the stray switchboard signals, and its success so far promises its continuance, telephone officials say. Skating is entirely optional with the girls.

"Wonder Whys" of an Observing Traveling Telephone Engineer.

By Ray Blain

I wonder why so many telephone companies continue to nail wood pole brackets on buildings for the purpose of attaching drop wires to them.

When open wire was commonly used for drops, there might have been an excuse for their use, but with twisted pair it's hard to justify the practice. I have known of men when installing telephones nailing one or more of these wood brackets on the building with 40-D or 60-D nails, and fastening twisted pair wire on the pony glass insulators with a tie that resembles a hangman's noose. Then they stood back and had the nerve to think that everything was done in a workmanlike manner.

Now a man can dent my fenders, cut rocks with my lawn mower or even knock my brew and I will not do anything drastic, but if anyone ever nails wood brackets to a house on which I may happen to be making payments I will surely try to make him hard to catch.

There are so many small, neat and easy-to-install fixtures on the market for the purpose of attaching drop wire to buildings, which can be purchased at such a small cost that it seems a pity that this ancient if not honorable practice of nailing wood brackets on structures other than poles cannot be entirely eliminated.

The Magneto Telephone Exchange Repairman; Rural Lines.

By John A. Bracken

That portion of the outside plant between the magneto exchange and the drop wires leading to the subscriber's premises is known as the line. It consists mainly of No. 12 B. W. G. bare iron wires and their supporting poles, cross arms, insulators, etc., forming what is commonly called open-wire rural circuits.

In view of the character of rural lines, the importance of good maintenance in its relation to satisfactory telephonic communication service can hardly be underestimated, owing to the fact that rural lines are more susceptible to faults or troubles than local lines because they are much longer and have more tree interference; also because the line-wire spans between the poles are longer, particularly those of the branches leading from the main lead or circuit to the subscribers' stations.

The troubles to which every rural line is more or less liable are opens, shorts, crosses, grounds and noise. An open in the line is usually the result of a broken wire. The break may be due to a variety of causes, among the principal of which are:

(1) A defect in the manufacture of the wire; (2) natural deterioration; (3) the wire having been accidently nicked by pliers when first placed; (4) defective splices; (5) friction of the wire against the insulator, usually the result of imperfect tying; (6) wire broken on account of sleet; (7) extreme cold; (8) blasting near line; (9) trees or limbs falling through or blown through line; (10) other poles falling on line; (11) lightning; (12) fire; (13) wagons and machinery attempting to pass under lines; (14) hunters shooting at the insulators; (15) inductive noises; (16) high resistance joints.

Short-circuits in the line are the result of the line wires being brought into contact, either by means of a piece of wire thrown across them, dropping into water, or by being twisted or hooked together. The latter is generally due to the line wires having too much slack in them between poles or other supports, thereby allowing the wires to be brought together by the action of wind or motion of nearby trees.

Partial short-circuits in the line are produced by poor conductors, which offer considerable resistance to the passage of an electric current, being thrown over or otherwise coming in contact with the line wires, such as kite strings, very fine wire, etc.

Intermittent short-circuits (commonly called "swinging short") are another source of line trouble, and are often difficult to locate. This fault is caused by the wind swaying the line wires to and fro and thus bringing them against one another. Pieces of wire thrown across the line wires and laying loosely upon them also give rise to this kind of trouble.

In speaking of crosses between two magneto line circuits, a direct metallic contact between the wires is referred to. Apart from many of the ordinary causes given for short-circuits, and which are also

causes for metallic crosses, another source is the result of too much slack in the wires. This is especially true when wires of different sizes and material are vertically over one another. The sun's influence upon such wires will, on a very hot day, cause them to expand unequally, and

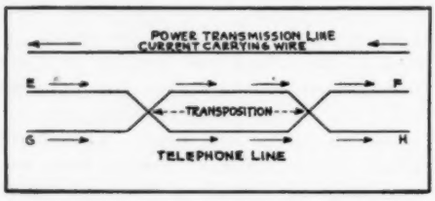


Fig. 1. Induction from Power Wire Neutralized by Transposition of Telephone Wires.

so drop one upon the other. Such faults will often clear up when the sun is obscured by clouds or after the sun sets.

Line wires that have become untied from insulators, allowing the wire to come into contact with another line, are causes for crosses; also pins bearing insulators and wire coming loose or rotting out of the crossarms and allowing the wires to make contact, are another source of this kind of trouble.

Connections between the line wires and the earth are called grounds and may result from the wire worn in trees, wire in contact with a guy wire, wire down in water or upon wet ground, or in contact with some metallic conductors affording a good earth connection, etc.

A partial ground is often due to broken or otherwise defective insulators. It may also be produced by the wire being in contact with a crossarm, pole bracket or pole, especially when damp or wet. Swinging grounds are usually due to the wires being blown by the wind or otherwise brought from time to time into contact with some conducting substance in connection with the earth.

Interference or noise on a rural line is the result of a variety of causes, among which are loose connections, improperly-made splices, hooked or hay-wire joints—that is, where a broken line has been temporarily tied together by means of a piece of hay baling wire—line wire becoming grounded, swinging crosses and short-circuits, electrical disturbances.

The main source of electrical disturbances to which telephone circuits are exposed are electrostatic and electromagnetic induction, as, for example, between telephone wires and electric lighting and circuits near and parallel to a telephone line circuit. The principal remedy for this disturbance of this kind is careful transposing (alternately crossing equal lengths of consecutive sections) of the line wires. This is illustrated in Fig. 1.

Here the current-carrying wire represents a power transmission line running parallel to the telephone circuit and producing an E. M. F. in the direction indicated by the arrows, between the wires of the telephone line and thus raising the potential of the line above earth. This induced voltage between the two circuits results in a circulating current through the telephone circuit rendering it noisy.

The effect of transposing the telephone line wires is to make the total E. M. F. induced in wire, *EF* exactly equal to the total E. M. F. induced in wire, *GH*. Hence, the E. M. F. in one of the telephone line wires will neutralize that induced in the other and thus reduce the noise in the line. The twisted pair wire commonly used in telephone practice is an example of transposed wires in a telephone line.

Electrical changes in the atmosphere and changes in the earth's magnetic field will cause a disturbance on grounded telephone circuits. It sometimes happens that a ground on an electric light or a power circuit in the same locality will cause all the grounded telephone circuits to become noisy, the telephone line acting as a return circuit for the grounded disturbing current. The only remedy for this trouble is to remove the ground from the electric light or power circuit.

If the telephone line is noisy, the trouble may be localized by opening the line at the exchange terminal pole and listening with the test set receiver towards the exchange and also towards the subscriber's stations, Fig. 2. If the exchange end is clear and the noise is on the line, travel along the line route and disconnect each branch circuit and drop connected to the main line and listen with the test set in the same manner as outlined. If no noise is heard in the branch circuits or drop wire, an inspection of the entire line will locate the cause.

A fair idea of the strength of the foreign current caused by induction can be obtained by connecting one clip of the test set to ground and with the other clip touching the wires in trouble. If only a hum is heard in the test set receiver, the circuit is not closely parallel to the disturbing wire; but if a loud hum or noise is heard in the test receiver, the telephone circuit is very near to the disturbing circuit.

"Brain Music" Supplied Electrically to Inside of Head.

Music heard clearly inside the brain, although no sound waves were entering the stopped-up ears of the hearer, is a new achievement of the science of electro-acoustics demonstrated by Sergius P. Grace, assistant vice-president of the Bell Telephone Laboratories, at a recent meeting of the New York Electrical Association in New York City.

Mr. Grace connected one of his hands electrically to a powerful vacuum tube amplifier like those used in radio receivers or electric phonographs. His assistant similarly connected one of his own hands. Each person then placed his electrified hand tight against one ear of a third person who was to hear the new "brain music," sheets of ordinary writing paper being between the operators' hands and the listener's head. Instantly the listener reported that he could hear, loudly and perfectly, the music being reproduced inaudibly by the amplifier.

The secret is, Mr. Grace explained, that charges of high-voltage electricity tend to attract anything in their neighborhood. The effect of the amplifier was to supply to the hands and paper sheets held against the listener's ears a high-voltage, alternating electric current vibrating in correspondence with the music being played by the amplifier.

Being an electric vibration only, this was inaudible. But as soon as the electrified hands were placed against the ears of the listener, their electric charges attracted intermittently the ear drums inside the listener's head, setting these ear drums into vibration just as sound waves would do but by electric forces instead of mechanical ones.

Speech can be communicated in the same manner. The practical applications of this discovery have not yet been worked out.

In a later demonstration this month words were transmitted over a telephone wire on the stage. Mr. Grace held a terminal in his hand, placed a finger of the other hand against the ear of another man and that person heard the words. No one else heard the speech.

Refinements of the apparatus, according to Mr. Grace, may enable a prompter to

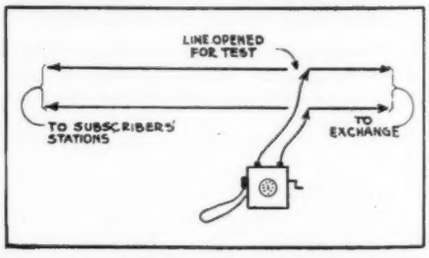


Fig. 2. Locating Trouble Through Opening Line and Testing.

give an actor his lines without any one in the audience being the wiser, even though at present the actor would have to stand very close to the wings.

Texas Association to Hold District Meeting at Abilene.

On November 20 and 21 the Texas Independent Telephone Association will hold a district meeting and traffic conference at the Holton Hotel, Abilene. The meeting is for all the Independent telephone companies in the western part of Texas and officers of the association expect a large attendance. The program promises to be good as some prominent men in the telephone industry are scheduled to be present and address the meeting.

Sundry Snapshots Along the Trail

Observations Pertinent and Otherwise on the Sunshine and Shadows of Telephone Work

By Well Clay

Ever was mankind a riddle,
Unsolved from age to age;
A little touch of the Mystic,
A little dash of the Sage;
A little smattering of honor,
A little streak of the thief;
A tangle of hazy religion,
A few threads of unbelief;
A lot of love for his dear ones,
A measure of hate for his foe;
A little of cheer and laughter,
A season of tears and woe
Of these is his life's web woven,
And when the weaving is done
Then only can we see the whole pattern
And note how the figures run.

As the life of man is made up of a lot of seemingly unrelated mixtures, so also is the telephone business made up from day to day of all those different efforts which, when joined together and as a whole influence the business, achieve the goal of good service. Experience shows us that certain practices end in certain results and that we must avoid other practices, or lack of them, if we would steer clear of giving poor service, resulting in poor public relations.

For those telephone executives who manage small plants and do most of the work themselves, it is easy enough to visualize the details of the various lines and know without reports what to do next and what is needed as to materials and labor. To the executives operating exchanges running into the hundreds or the thousands of stations, such a simple course of procedure could never do, and frequent inspections and written reports must be secured and placed on the manager's desk before an intelligent course of action could be followed.

The experience of many years of operating a telephone exchange has resulted in the fixed opinion that the best safeguard of a plant and its use to the public is regular, seasonable detailed inspections, the results of which are reported on regular blanks prepared for the individual use of certain departments. Only in this way can the management be made familiar with the actual needs of the physical plant.

Also, unless there are seasonal inspections, as a matter of routine, those parts of the plant that are nearing the point where interruptions to the service will soon result will not be noticed until the actual break in the service occurs. Regular seasonal reports, properly examined by the heads of the various departments, will enable an intelligent policy of preventive maintenance.

Preventive maintenance will save most of the emergency trips for repairs, and reduce the cost of operation. This is so far the reason that where the policy is to wait for the actual break to occur, it is also generally the policy to make the repairs on a scale only necessary to put the part back into service; and then jump to some other case of trouble, which is generally waiting, perhaps many miles away. This is a wasteful policy always, and one which disrupts amiable public relations.

Where maintenance is carried on from information gleaned from studies of inspection reports all requirements in that section can be looked after at the same time, for the repair crew foreman knows in advance what he is to do, and can provide the tools and materials necessary. This avoids unnecessary mileage and makes another trip to that section unnecessary for some time, whereas, the hit-and-run method may result in another trip to almost the same spot the next day or so, or even the same day.

Periodical inspections should cover not only station equipment and installations but cable terminals, racks, batteries, cable hangers, underground manholes, splices, drop wires, overhead leads, and all classes of construction. These are just as necessary as inspections of the books or cash account.

These reports should be short and to the point and be on file where they are available for inspection. Especially should they be consulted just before making maintenance trips to the point under consideration and also just before making a new inspection. This will give the party making the inspection a check on the reliability of the repair department. Only by a close check of this kind can it be ascertained whether the repairs or alterations made after the last check-up, were done as directed, or at all.

As yet there are no standard forms, so far as the writer knows, for these inspections, but each company has formulated a more or less complete and workable system for its use. There could, and should be, simplified forms for all classes and grades available to those who have use for them. By their use the necessary repairs can be made in seasonable weather before service is interrupted.

Not only should there be standard forms for repairs and maintenance but standard practices could also be adopted for reports on installations, removals and changes, estimates for new extensions, and in fact, any and all activities in our line.

Each state association secretary should invite all his member companies to submit such reports as they have formulated and used, to his office. After comparisons and elimination of duplicates or unworkable forms, the approved ones could be sent to the national secretary. He would in turn have them compared and submit those seemingly best suited to the national convention for inspection and adoption by members as fitted to their especial needs.

APHORISM: Bull's-eyes are mostly made by shooting directly at the target.

Names of Operating Companies Changed to Uniform Name.

Announcement was made the middle of last month of the change of name of the Central West Missouri Telephone Co. to conform to the name under which other telephone properties are owned and operated by the company controlling the Central West Missouri. Effective October 15, the 55 exchanges owned by this company in Missouri became known under the name of the Western Telephone Corp. of Missouri.

The change of name is made to more fully standardize on the name Western as applied to the various holdings of this public utility group. These holdings include other telephone groups in Kansas, Oklahoma and Texas, which with the 55 exchanges in Missouri include 109 exchanges in all. The operating company in each state is known now as the Western Telephone Corp.

In addition there are other companies in the group such as Western Light & Power Corp., Western Natural Gas Co. and Western Ice & Utilities Co., all of which are subsidiaries of Western Power, Light & Telephone Co., with Nathan L. Jones of Salina, Kans., as president.

Northeastern Indiana Association to Hold Fall Meeting.

The fall meeting of the Northeastern Indiana Telephone Association will be held in Fort Wayne on November 20. It is expected that more than 150 telephone men and women of northern Indiana and western Ohio will be in attendance.

A very interesting program is being worked out by the committee in charge and all indications point to a successful meeting.

The officers of the association are P. J. Maloney, Columbia City, president; C. W. Morse, Angola, vice-president; Martin Umbach, Fort Wayne, secretary and treasurer; Harry Gray, Fort Wayne, and E. E. Knipple, of Marion, members of the executive board.

Teletype—The Telephone Typewriter

Written Communication System Now Used in Modern Business—Description of Teletype Machines and Purposes They Serve in Connection With Telephone Circuits—Paper Presented at Plant Conference During the National Convention

By A. S. Benjamin,
Sales Engineer, Teletype Corp., Chicago

Business in the past few decades has grown from companies occupying one small building to organizations with offices, factories, and warehouses scattered in various parts of a city and in many cases, different cities. It would be almost impossible to operate an organization with its various branches separated without a proper means of communication to coordinate its divisions. Business is competing today on a basis of service, and to render this requires a communication system which is accurate, rapid and provides an authoritative and permanent record.

The most common means of communication are, of course, messenger service, the mails, the telegraph and the telephone.

Messenger service is greatly limited due to the distance that can be efficiently covered by a messenger. It is not uncommon to have messenger boys require an hour or so to deliver messages to points a short distance from an office. The mails, even with our limited trains and air service, require an appreciable length of time for delivery. Messengers and mails, although slow, can handle carefully prepared messages, thus eliminating any possibility of misunderstanding. This means of communication, however, does not provide personal contact with the recipient of the message.

The commercial telegraph provides a rapid and highly-accurate means of communication, but it is comparatively costly and also lacks personal contact and flexibility.

The telephone provides a rapid and flexible means of communication. An analysis of telephone service, however, shows that it is more or less subject to misunderstanding, and that it lacks authority in that no record of the message is available unless it is taken down by the person at the receiving end. The person with whom we wish to converse must, of course, be at his telephone, otherwise our business cannot be transacted.

It is, therefore, obvious that a system which combines the good features of all of the present means of communication would be an ideal one for modern business.

Teletype, the telephone typewriter, provides a system of communication which is rapid, accurate, flexible, and one which produces an authoritative and permanent record. Teletype, as its name implies, is an instrument which permits sending of typewritten messages to distant points. The message is instantly and automatically recorded at the receiving point without the necessity of an attendant being present.

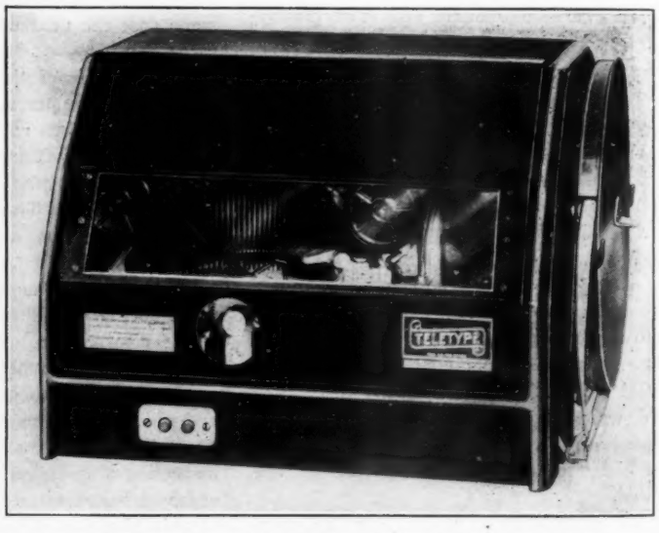
Teletype resembles and operates like a typewriter. It has a bank of keys, typebars and a platen similar to that found on a standard typewriting machine. When a number of teletypes are interconnected by a system of wires, it is possible to transmit typewritten messages from one point to another. The depression of a key on the sending instrument causes a character to be printed on that instrument, and at the same time it is instantaneously and automatically recorded on all other machines connected to the sending instrument.

There are two general types of teletype receiving units—the page teletype which records the message on an 8½-inch sheet of paper, and the tape teletype which records the message on a ⅜-inch wide tape.

The page teletype will do practically everything that a standard typewriter will do except back space. It is not equipped with tabulating stops, although it is a very easy matter to send messages in tabulated form by merely spacing the carriage to the proper position on the page. In order to take full advantage of automatic reception on the page machine, rolls of 8½-inch width paper are ordinarily used on the instruments, which permits the printing of a series of messages without an attendant other than one who tears off the messages from time to time.

When the page teletype was first introduced for general business communication, messages were received on rolls of blank paper; and in many cases, the information was then transferred to special order forms by typists.

In order to eliminate transferring information from teletype records to forms, a special page machine was developed which makes it possible to send messages



Direct Keyboard Sending-Receiving Model 14 Tape Teletype.—Direct Keyboard Receiving-Only Model 14 Tape Teletype.

over a teletype circuit and automatically record them directly on forms. In many cases this machine has made it possible to eliminate all typists from warehouses and similar places. Carbon copies can, of course, be made on the page teletype.

The tape teletype records its message on a narrow tape which is automatically and continuously fed through the machine. The tape machine is somewhat simpler than the page instrument and is being used for two important classes of service. One, where the messages are short and of a transitory nature, in which case the tape is reeled up on an automatic winder and references made to the message as it is printed. The rolls of tape can be filed for future reference and provide a permanent record which has been found so essential in modern business.

The tape machine also has been found applicable to the other extreme of service: that is, where the messages are comparatively long and a considerable amount of business is handled over the circuit. In that case, gummed tape is used on the instrument and an operator pastes the tape to a message blank. This particular application of the tape machine has been highly developed by the telegraph companies.

Approximately 75 per cent of the messages handled by the Western Union Telegraph Co. and a large percentage of those handled by the Postal Telegraph Co. are transmitted over teletype circuits. Although some page printers are being used, the telegraph companies are inclined to use tape reception because of certain economies. The tape teletype is somewhat cheaper and

Tape Transmission Sending-Only Model 12 Page Teletype Installation at the New York Office of the Associated Press.

simpler than the page instrument, giving a lower initial and maintenance cost.

Another factor is the saving in line time. When an error is made on a page receiver, it is necessary to have the entire message re-run in order that a correct copy be available. In the case of the tape machine, it is very easy to rectify errors by sending the correction and pasting the corrected portion of the message over the part which has been incorrectly sent.

The feeding of the paper and the returning of the carriage on the page machine is controlled by the sending operator. This requires certain signals and line time. These functions are not required on the tape printer and the line time can, therefore, be utilized for the actual transmission of messages.

There are two general methods of transmission. The simplest teletype machine is equipped with a bank of keys, the depression of any one of which causes a series of impulses to be sent over the line and the proper character to be printed. This is the direct keyboard system of transmission and is the instrument finding general use in business practice.

The second means of transmission is one where a perforated tape is first prepared on an instrument called the perforator, the tape then being passed through an automatic transmitting distributor which, in turn, sends out the impulses over the line and causes the printer mechanisms to function.

In case of the direct keyboard, the speed of operation is controlled entirely by the keyboard mechanism. If the maximum speed of the circuit is 60 words a minute, it will not be possible for the operator to manipulate the keyboard at any greater speed. Should the operator manipulate the keys at a speed lower than that of the circuit, the full capacity of the circuit would not be utilized.

In the case of tape transmission, the transmitting device is operated at a uniform speed and is not under the direct control of the sending operator. If the speed of the circuit is 60 words a minute, the maximum speed of the circuit can be utilized at all times, since it is possible for the operator to perforate tape at a speed higher than that of the circuit.

This makes it possible for the operator to keep a sufficient amount of tape perforated in order to keep signals going over the line at all times: e.g., the tape could be perforated at the rate of 70 words a minute for a certain interval and then at the rate of 50 words a minute for the same length of time, yet there would be sufficient tape perforated to send out signals over the line at a rate of 60 words a minute. It is, therefore, obvious that tape transmission is desirable where the number of messages to be handled over a circuit is exceptionally high and it is necessary to utilize full line time.

Inventors have been working on the development of printing telegraphs for more than 75 years. The present models of teletype are the results of more than 20 years of development by specialists in printing telegraph equipment.

As business expanded, the use of commercial telegrams greatly increased and at such rapid rate that it was impossible for the telegraph companies to provide facilities fast enough to take care of the increased business. Competent Morse tele-

Direct Keyboard Sending-Receiving Model 12 Page Teletype.

graph operators were hard to get and wire facilities were costly.

Communication companies, therefore, looked around for a more efficient means of handling messages in order to meet the increased demand for telegraph service. The telegraph companies were, therefore, the first ones to realize the possibilities of teletype. Teletype was then introduced and solved the problem.

It is very easy to train typists in telegraph routine. It was found that a teletype operator using tape transmission could handle approximately twice as much business as could be formerly handled by Morse operators. Teletype, therefore, not only solved the labor problem but also introduced a large saving in line construction due to its high speed of operation. The accuracy of teletype operation was found to be surprisingly high.

After years of successful service by commercial telegraph and railroad companies, teletype was offered to the business world for general business communication service. It is now used by practically every conceivable business, such as hotels, police departments, railroads, banks, insurance companies, airways, communication companies, news distributing associations, public utility companies, brokers, steel companies, department stores and innumerable other general merchandising and manufacturing organizations.

It is possible to practically duplicate every type of telephone circuit. The simplest teletype circuit is, of course, one which has a sending-receiving machine at one point and a receiving-only machine at the distant point. This permits the transmission of messages in one direction only. Cir-

cuits with sending-receiving machines at either end of the wire permit sending in either direction. Lines arranged for duplex operation make it possible to provide teletype apparatus at the terminal ends for simultaneous transmission of messages in both directions over a single channel.

Most communication companies have been selling Morse telegraph service along with telephone service. Telegraph circuits have been more or less of a by-product of telephone circuits; and with slight modifications, it is possible to use superimposed telephone lines for teletype operation.

Some systems are arranged with several machines on one circuit so that the operation of any sending machine on the line causes all the other instruments on that circuit to record the message. Control devices are available which permits any station to select any other station on the line in order to record the message at desired points without the other station receiving the message.

Systems can be arranged with a central transmitting point from which it is possible to send simultaneously to a large number of receiving-only machines. Such circuits are being used for police communication, news and stock quotation distribution where it is desired to send information from one point to a large number of outlying stations.

One very interesting application of telephone typewriter service is police communication. Previous to the use of teletype, sending out reports to all precinct stations involved calling in a large number of points; and after the desk men at these points were in line, the message was given. It was necessary for each man to make a record of the message in long hand, during which time it was not possible for him to devote his time to anything else.

In Chicago, for instance, we have 48 stations. The police telephone system was originally laid out so that the messages were sent to seven district stations and taken down by operators at those points. They, in turn, would re-transmit the message by telephone to the precinct stations under their jurisdiction. This system involved setting-up a large number of telephone connections, required the attention of 48 different men and necessitated their recording the messages in long hand.

The introduction of teletype for this service has eliminated all this work. At the present time the operation of one switch starts up the motors on 48 instruments and the operation of the keyboard at the central station sends the messages to 48 points without the help of a single attendant at any of the receiving stations. A bell on the instruments indicates to the men on the premises that a message has been transmitted. It is only necessary to tear off the recorded message which takes only an instant.

When the telephone was used for this particular service, errors were innumerable. The color of criminals' eyes and clothes were invariably transposed, as well as the figures in automobile license numbers and similar information. It was impossible because of the amount of time involved, to have 48 men check back to the central operator.

Teletype makes an exact copy of the transmitted message at all points, and if the sending operator checks his copy, he can be reasonably sure that every point has received the proper information. The Chicago police system is arranged so that it is possible to select any one or group of circuits, should it be necessary to send to any one circuit without the other stations receiving the message.

There are several systems in operation where two-way communication is provided between outlying stations and a central point. For example, the commercial telegraph companies install sending-receiving teletypes in their various branch offices and connect them by wires to their main operating rooms where concentrator tables equipped with signal lamps and jacks are provided.

When a branch office desires to send a telegram to the main office, a key is depressed at the branch office which operates a signal at the main office. The main office operator then connects her machine to the branch office circuit which permits the branch office operator to send the messages to the main office. If the main office has messages for the branch office, it is merely necessary to connect a sending machine at that point to the proper branch office circuit.

There are also installations where it is possible for outlying stations to communicate with a central point and also to have the central operator manually connect them through to another outlying station. This type of installation is practically a duplicate of a manual telephone system.

Teletype has not only been found applicable for communication between widely-separated points but is being used quite extensively between departments but a short distance apart. Hotels, banks, utility companies and most manufacturing plants have need for an intercommunication system over which recorded instructions can be sent.

There are many teletype installations at present which involve as many as 50 machines within a single building, controlled by keys or through the medium of an automatic teletype switchboard. The Roosevelt Hotel in New York has an installation consisting of 22 sending-receiving machines and 28 receiving-only tape teletypes.

These instruments are connected to an automatic teletype switchboard, which is in reality a modified telephone P. A. X. At each sending machine there is provided a small dial box on which is mounted a dial, cam key and busy lamp. To select a station, it is only necessary to throw the cam key which corresponds to lifting the telephone receiver from its hook and dial the proper digits which sends the selecting impulses over the line.

If the called station is not busy, a connection is established. This is indicated by the motor on the sending machine starting up, which permits the operator at that point to transmit the message. Should the called station be busy, the motor on the sending machine fails to start and the busy lamp on the dial box lights up, giving a visual indication that the circuit is busy. The cam key is restored to normal and a connection again attempted later on.

It is obvious that the development of teletype circuits has practically followed that of the telephone. As a further development, circuits are being arranged to give us service similar to telephone toll service. That is, subscribers are furnished with teletypes and the exchange offices equipped with the proper type of switchboard which makes it possible for a subscriber to call any other subscriber who is equipped with teletype. It is evident that this type of service provides the most efficient means of communication thus far developed.

An experimental exchange system was recently established by the American Telephone & Telegraph Co. between switchboards and telephone company offices in New York, Boston, Chicago and some adjacent cities. When placing a call, the subscriber switches on the power at his station, which is analogous to lifting the receiver from the hook.

This operation lights a line lamp at the telephone typewriter switchboard. The operator responds by connecting his instrument to the calling subscriber's line and is advised as to the subscriber's require-

Business Organization as a Complete Entity

I like to think of a business organization as a complete entity. I often picture it as a mosaic, each department and each individual fitting perfectly into its place, and the effect of the whole depending on the proper functioning of each individual unit. All too often public relations are considered a thing apart and not conceived as a part of a mosaic such as I have suggested.

The balance sheet and income statement are a very important part of this mosaic. In fact, the acid test of good public relations will be found in these two statements. Unless an organization is making fair earnings, I never have been able to see how its public relations could be regarded as successful.—Andrew W. Robertson, Chairman of Board, Westinghouse Electric & Mfg. Co.

ments. The operator then connects through to the switchboard in the called subscriber's city, and the operator at that point establishes the final connection.

Automatic switchboards arranged for trunking are now under development.

Teletype is being operated by radio, one interesting application being a circuit between New York and London used for handling service messages and other details necessary for establishing telephone connections for the trans-atlantic telephone service. Very satisfactory results are being obtained on this circuit.

During the past few years very few instruments have been sold direct to ultimate users of teletype for general business communication. Practically all of them have been leased from the American Telephone & Telegraph Co. and its associated companies, since it has been found that a subscriber is interested in a service which includes instruments, wire facilities and maintenance on the instruments.

This brings up the matter of maintenance which is one of the important factors in the service. Teletype, being a mechanical device, requires a certain amount of maintenance. The Model 12 page teletype and the Model 14 tape teletype, which are finding extensive use in business communication at the present time, are produced in large quantities and are not, as many people might think, in the experimental stage. In the development of these two models, continuity of service with a minimum amount of attention has been given every consideration.

Teletype requires intelligent supervision and proper inspection at certain intervals. It naturally must be oiled, kept clean and certain major adjustments checked; and should a case of unusual trouble develop, the man responsible for the maintenance of the instrument must be well versed in the operation of the machine to quickly find the trouble and make the proper repairs.

It has been found that it is a very easy matter to train men with experience in telephone maintenance, in the theory, operation, maintenance and installation of teletype. The experience of the Bell system, Western Union and Postal Telegraph companies, indicates that there should be no difficulty on the part of the Independent companies in setting up the proper routines and training their men for the maintenance of this apparatus. The manufacturers of teletype maintain a large school of instruction at their plant in Chicago. This school is available to all telephone companies for the training of their teletype maintenance men.

The demand for telephone typewriter service has been rapidly increasing during the past five years and an analysis of future requirements indicates that there will be still larger demands for the service. An article by R. D. Parker in the July, 1929, Bell Telephone Quarterly discloses the following interesting data regarding the use of telephone typewriters by the Bell system:

	Page Printers in Operation	Type Printers in Operation	Total Number of Printers in Operation	Miles of Long Line Printer Circuits Not Including Associated Company Lines
1925	1,000	....	1,000	70,000
1926	1,500	....	1,500	90,000
1927	3,000	100	3,100	175,000
1928	5,000	1,500	6,500	280,000
*1929	9,500	6,500	16,000	.....

* Estimated.

The approximate number of teletypes which have been produced by the Teletype Corp. are: 1918 to 1927, 15,500; 1928, 12,700; 1929 (last three months estimated), 25,200, making a grand total of 53,400.

Transatlantic Service Extended to All Points in Austria.

Transatlantic telephone service was extended to all points in Austria on November 6. Service to the city of Vienna has been available for nearly a year.

Austria has a population estimated at 6,785,000, served by approximately 220,000 telephones. Calls to Austria are routed through London. The circuit from London to Vienna is about 900 miles long.

Oklahoma Association Announces 1930 Convention Dates.

The 1930 convention of the Oklahoma Utilities Association will be held at Tulsa on March 11, 12 and 13, Ed. F. McKay, manager of the association, has announced.

HONEST MEASURE?

By Miss Anne Barnes,

Traveling Chief Operator, Iowa Independent Telephone Association, Des Moines, Iowa

"Oh, Margaret, your party was lovely last night. I said to Ada this morning. 'When does she find the time to get everything ready on such short notice?' "

"Oh, thanks, Mary. But tell me—was the dinner all right?"

"It was more than all right. It was luscious and dainty. As usual, my devoted husband said you had no equal in making good coffee."

"Thanks again, Mary. And now, I must admit I put in a full day. After getting my house in order, I went downtown to buy my foodstuffs. First, I went to Benson's coffee store."

"I used to go to Benson's for my coffee, too, but someone, I don't remember who, told me that he doesn't give good measure."

"Oh, Mary, I doubt that. But, of course, I never look at the scales. I wouldn't be bothered doing that. I don't suppose more than one person in a hundred watches the scales."

"Perhaps not. I recall now who told me. It was Merle. She is terribly close herself. I heard she was always weighing or measuring everything she bought when she got home. Sorry I mentioned what she said about Benson's. But go on with your story."

"There isn't much more to tell. By the time I had all my shopping done it was getting late. Then I suddenly remembered I had to put in some long distance calls, so I hurried into the telephone office and put in six calls. Luckily, I reached every one of the people I wanted, but I had to have the operator charge the bill as I didn't have enough money. I know my husband will be furious at the bill. Anyway, I don't believe I talked as long as that operator said I did. I told her it was simply ridiculous. I am going to have my husband investigate."

"Oh, they know how to charge. I don't use long distance service and I hope I'll never have to," sighed Mary.

MORAL: Each yard of material purchased from the dry goods merchant is measured from end to end.

The grocer uses a scale in measuring, which is adjusted to measure the required amount. When the required amount is in the pan, the scale indicates it.

The telephone company uses a calculagraph clock in measuring its goods (long distance conversation time). The operator places her ticket in the clock and stamps the start of conversation just as soon as the customer starts conversation with the distant telephone or person specified. When conversation is finished, she places the ticket in the clock and stamps the time the conversation is finished.

But she allows a little bit more than do the merchant and the grocer. She does not charge him for the first 15 seconds of any last minute over the initial time the clock shows he talked. For example, he talks eight minutes and 15 seconds as registered by her clock. She charges him for eight minutes.

Honest measure?

Pacific Bell Decision Rendered

Decision of California Railroad Commission in Pacific T. & T. Co.'s Petition for Rate Increase Rendered on November 7—Decisions Involve Application of the "Ceiling Rule"—San Francisco and Los Angeles Rate Case Findings

The Pacific Telephone & Telegraph Co.'s application for a $7,000,000 increase in rates in the San Francisco and East Bay territory, hearings upon which have been running for more than two years and as an outgrowth of which rates in the Los Angeles area were drawn into question by action of the California Railroad Commission, resulted on November 7 in two decisions.

In one, the company is granted an increase in rates in San Francisco and the East Bay amounting to $2,100,000, or 30 per cent of the $7,000,000 it sought, which will increase the company's return on its property in that section from 3.87 per cent to approximately 7 per cent. In the other, the Los Angeles area is given a decrease in rates amounting to $2,310,000, based on 1929 business, which will reduce its earnings there from over 9 per cent to a normal basis.

The result of these two decisions will be that the Pacific company's revenues in the state of California will not be increased, while rates in the two sections involved will be placed at a level to yield approximately the same return in each.

These decisions involve the application for the first time of the so-called "ceiling rule," namely that a company having a far-flung business in the state, which is on a reasonable and normal earning basis as a whole, may not pick out one section where its earnings are subnormal and secure a rate increase there without expecting a decrease somewhere else, so that its overall state earnings will not be augmented.

The San Francisco Case.

The salient points of the San Francisco-East Bay decision, which covers 150 pages, are:

I. Length and Extent of Proceeding: The company's application was filed on May 18, 1927. The case was submitted on October 16, 1929, and decided November 7, 1929, a period of two years, five months. The number of exhibits totaled 197 and the days of hearing, 63.

II. Cities Involved (p. 6): (a) San Francisco exchange—San Francisco, Daly City, Lawndale, Colma; (b) East Bay exchange—Oakland, Berkeley, Piedmont, Alameda, El Cerrito, Albany, San Leandro, Emeryville.

III. Service Involved (p. 6): The service involved covers exchange telephone service in the two exchange areas of San Francisco and East Bay; also transbay service. As of December, 1928, the subscribers totaled 242,900; telephone stations, 373,150.

The service also represents half of the Pacific company's exchange service in California, one-third of the Pacific system's exchange service in California, and one-fourth of the total Pacific system's exchange service.

IV. Company Interrelations (p. 8): Eighty-two per cent of the Pacific company's stock is owned by the American Telephone & Telegraph Co. This latter company operates as a centralized general administrative organization for the associated companies, including the Pacific company; supervises, and in some cases handles, the financing of local companies; supervises and passes upon budgets of local companies and prescribes extensive and voluminous rules, regulations and practices for all of the local companies.

Ninety-eight per cent of the Western Electric Co.'s stock is owned by the A. T. & T. Co. The Western Electric Co. manufactures the major portion of telephone equipment used by the Pacific company; also acts as purchasing store, supply and repair department for Pacific company.

San Francisco Case Findings.

V. Important Findings—a. (p. 10): That 1½ per cent of gross revenue charged by American Telephone & Telegraph Co. for administrative, supervisory and other service is not found from the evidence to be excessive in amount.

b. (p. 13): Rates requested by the Pacific company, which would result in an increase of annual revenue of approximately $7,000,000, not at all supported by evidence before the commission in the proceeding.

c. (p. 15): Service now being rendered by company may be considered reasonably good service.

d. (p. 15): Company criticized for poor service rendered prior to filing of application and for excessive increased expenses during pendency of proceeding.

e. (p. 18): Finds revenue to be credited to the San Francisco-East Bay exchange, $1,747,572.04 more than that reported by the company on the basis of the service rendered in 1928—this on account of revision of basis of toll prorations; finds that transbay toll message revenue should be credited in full to the two exchanges, and that an amount equivalent to 30 per cent of remaining originating toll message revenue should be credited.

f. (p. 23): Reasonable allowance for operating expense, taxes and uncollectible bills, but excluding depreciation on 1928 basis found to be $14,555,270; compared with amount reported by company of $15,824,462 and company's estimate of reasonable expense of $15,424,167. This represents a reduction below expense of 1928 of $1,269,192 and below the company's estimate of $868,897.

g. (1) Valuation (pp. 26-28): Generally denies claim of the company as to valuations of plant; (2) (pp. 28-30): Denies claims of the company for special asset accounts.

h. (p. 35): Makes reduction of $350,000 in appraisal of properties on account of excess payment for telephone instruments; points out that price paid to American Telephone & Telegraph Co. was unreasonable as indicated by testimony.

i. (p. 37): Reduction in historical reproduction cost of $312,000 and reproduction cost new of $480,000; made on account of apparent excess profits of Western Electric Co. in acting as manufacturing, supply, store and repair agent for associated companies.

j. (p. 39): Deducts from appraisal, $140,000 in East Bay, and $262,000 in San Francisco for duplication.

k. (pp. 40 and 43): Finds reasonable historical reproduction cost as of June 30, 1928, $61,762,492; reasonable reproduction cost, new, $64,620,781; reproduction cost less depreciation, $51,410,512. (Note: Company's actual performance appraisal comparable to historical reproduction cost for same date was $67,298,372.)

l. (p. 46): Finds reasonable rate base for San Francisco-East Bay properties to be $61,762,492 for the year 1928 under the sinking fund method of allowing for depreciation for use in testing and determining what rates are reasonable and will yield an adequate return on the fair value of the property in use in public service. This is in comparison with the fair value claimed by the company of $84,690,046. It represents a reduction of $22,927,554.

m. (p. 47): Six per cent sinking fund basis found reasonable in determination of depreciation annuity, and on this basis a reasonable annuity of $1,834,702, which compares with the company's claim of $2,836,288, a reduction of $1,001,586.

n. (p. 49): Net revenue based on reasonable adjustment of revenues and expenses would be $2,389,110, or 3.87 per cent return.

o. (p. 52): In the instant case a return on the rate base of approximately 7 per cent is reasonable and fair both to the

(*Please turn to page 32*)

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Strowger Automatic Dial Telephones are on order for the London terminus, Euston; and the loco. centre, Crewe.

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Old and Quaint in A
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Upper Two Views Show Strowger Automatic Dial Equipment at Port au Prince, Haiti. Lower View Is of the Attractive New Building in Which the Automatic Exchange is Housed.

STROWGE
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Aarance—But With a
lodern Telephone System

ONE of the oldest cities of the western hemisphere, Port au Prince offers the visitor to Haiti many strange and interesting sights. Ancient as are many of the buildings that may be seen, and quaint as are some of the age-old customs, the government owned telephone system of the city is modern to the nth degree.

Housed in a new fire and earthquake proof building of attractive design, the Strowger Automatic Dial equipment for Port au Prince has a present capacity for serving some 1500 telephones. When it is realized that in 1922 there were only 104 telephone subscribers in the entire city, the growth in the use of communication facilities during the last few years can be truly appreciated. It is evidence not only of the increase in business activity in Port au Prince, but also of the stimulus in the use of the telephone which Strowger Automatic Dial operation brings wherever it is installed.

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TOMATIC

STEMS

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(*Continued from page* 28)

telephone company and also to the public.

p. (p. 54): Finds the increase in revenue to which the company is entitled to be $2,100,000.

q. (p. 55): Rates: The commission in determining rates for telephone service points out that this involves the question of divided burden between the various classes and groups of subscribers; that it is not an exact science but must be based on a broad consideration of all factors; that the present rates for the San Francisco exchange were originally fixed by a board of supervisors and later in 1918 revised by the postmaster general; that since the rates were originally fixed, the communities have doubled in number of telephones used, and that a revision of rates as well as an increase is advisable.

(p. 56): The request of the San Francisco Chamber of Commerce for the inclusion of South San Francisco industries in the San Francisco primary rate area is denied on the ground that they already have San Francisco service, and that to meet the request without discrimination would result in an unreasonable increase in burden to the South San Francisco subscribers.

The commission authorized the establishment of a combined exchange with two zones—San Francisco zone and East Bay zone. It denies the company's request for a reduction in the primary or base rate areas.

(p. 57): Finds that the present flat-rate business service covering individual business, commercial private branch exchange and intercommunicating systems and hotel private branch exchange flat-rate service should be eliminated and all business service of the San Francisco and East Bay area placed on a message or measured rate base in order the more reasonably to divide the charges between the small and large users.

(p. 57): Finds that the present four-party coin-box service (residence) and general coin-box business service of San Francisco represents an obsolete and depressed class of service and should be eliminated, and prescribes a two-party measured residence service in place of the four-party coin-box service.

(p. 59): Denies the request of the company that higher rates be fixed for San Francisco area than the East Bay area, finding that due to the more extended territory and costs of the East Bay Area, no differential should be made effective.

(p. 59): Points out that it is recommended and appears reasonable, in readjusting and increasing the rates at this time, that business should bear a somewhat greater proportion of the increase than residence service.

(p. 59): States: "As a community grows, the value of telephone service to business subscribers increases at a much faster rate than to residence subscribers. In fact, the value to residence subscribers, is apt to reach a maximum, at which point an increase of rates may result in a decrease in use of service and no material increase in revenue.

The rates herein found reasonable contemplate readjustment of the differential not only between different classes of service but also between the various grades of service in each class. The present rates as to basic division between classes of service were established when the two exchanges were less than half the size they are at the present time, and it would appear reasonable that a readjustment of the division of burden should be made. Deviation rates should also be done away with."

(p. 59): Commission provides that business subscribers now receiving flat-rate service shall be given notice of the application of new rates for at least one month prior to the making effective of measured rates; it also provides that subscribers may request changes in the form of moving or change of telephone or groups of telephones without charges during the period to February 28, 1930, when such move or change is required in changing from one type of service or telephone set to another.

The New Rates.

In general, the rates prescribed by the commission, effective January 1, 1930, are as follows:

Residence Service: One-party flat-rate desk set, $4.25; two-party flat-rate desk set, $3.25; two-party measured rate service: Minimum bill including 60 messages per month, $2.50; all over 60 messages, 3½ cents per message. Extension telephones: Desk set, 75 cents; wall set, 25 cents less than desk set; and hand set 25 cents more than desk set.

One-party line business service: First 85 messages per month: desk set, $5.25; all over 85 messages a month, 3.5 cents per message. Extensions, 75 cents per month; wall set, 25 cents less than desk set, and hand set, 25 cents more than desk set.

Commercial private branch exchange service: Switchboard rate, cordless type: 3 trunks, 7 stations, $4.00; 5 trunks, 12 stations, $5.00. Cord type: Non-multiple, 40 lines or less, $6.00; non-multiple, 41 to 80 lines, $10.00; non-multiple all over 80 lines, $12.50, and multiple per position, $18.00. Trunk rate: First two trunk lines, $5.00; each additional trunk line, $2.00; message rate, 3.5 cents per message. Station rate: Each desk set, $0.75; each wall set, $0.50; and each hand set, $1.00.

Hotel private branch exchange: Board rates are same as commercial P.B.X.: trunk rates, no charge; message rates, 4 cents per message. Station rate: Non-guest room: Desk set, $0.75; wall set, $0.50 and hand set, $1.00. Guest room rate is 15 cents less on each type of instrument.

The salient features of the Los Angeles decision are: Reduced rates are effective January 1, 1930, based on 1929 business. The reduction amounts to $2,310,000.

The Los Angeles Decision.

The reduction in general takes the form of a reduction of 25 cents or more per station in all telephone service in the Los Angeles exchange, and a reduction in the message rate to one-party business and in the board and trunk rate to commercial private branch exchanges and hotels.

In the case of business telephones, the minimum bills are reduced from $5.75 to $5.50 for desk sets and the number of messages increased from 75 to 85 per month. The message rate of messages in excess of 85 is made 3½ cents per message as against the present rates of 5 cents and 3½ cents. Rates for extension telephones have been reduced 25 cents for desk sets and wall sets for all business, telephone service and 50 cents in the case of residence services.

Reductions are made in the case of private branch exchange service, in the trunk rates and board rates. Board rates for hotels are reduced the same as commercial private branch exchange and rates for guest-room sets are reduced 35 cents. The mileage charges applicable to telephone service in the same or adjacent buildings is eliminated. Special reduction is made in the charge for joint users' service, and also, for the cost of moving and changing telephones.

A general comparison of the main rates fixed and those in effect is as follows:

	Present Rates	New Rates
Residence Service:		
One-party	$4.75	$4.50
Two-party	3.75	2.50
Four-party	3.00	2.75
Extension stations	1.25	.75

Above based on desk set stations; wall station 25 cents less; hand sets 25 cents more, on rates fixed. Hand sets 50 cents more under present rates.

Business Service:

Present rates, one-party: First 75 messages or less, $5.75; next 125 messages, 5 cents each; all over 200 messages, 3½ cents each.

New rates, one-party: First 85 messages or less, $5.50; all over 85 messages, 3½ cents each.

	Present Rates	New Rates
Extension desk stations	$1.25	$1.00
Extension wall stations	1.00	.75
Extension hand stations	1.75	1.25

Semi-public Service:

Continued as at present, except extension sets reduced 25 cents.

	Present Rates	New Rates
Commercial P.B.X., boards, manual equipment:		
Cordless type switchboard:		
Capacity 3 trunks, 7 stations	$5.00	$4.00
Capacity 5 trunks, 12 stations	6.50	5.00
Cord type switchboard:		
Non-multiple, 40 lines or less	7.50	6.00
Non-multiple, 41-80 lines	12.00	10.00
Non-multiple, over 80 lines	15.00	12.50
Multiple	18.00	18.00

	Present Rates	New Rates
Station Rate:		
Hand set	$1.75*	$1.25
Desk set	1.25*	1.00
Wall set	1.00*	.75
* Without dial, for dial add 25 cents.		
Hotel P.B.X.:		
Board rates, same as commercial, private branch exchange.		
Trunk rate, no charge.		
Message rate	$0.05	$0.05
Station Rate:		
Non-guest room:		
Hand set	$1.75	$1.25
Desk set	1.25	1.00
Wall set	1.00	.75
Guest room:		
Hand set	1.50	.85
Desk set	1.00	.60
Wall set	.75	.35

Program for Silver Jubilee Convention of Illinois Association.

The 25th annual meeting of the Illinois Telephone Association is to be held next week at Hotel Abraham Lincoln, Springfield, on Wednesday and Thursday, November 20 and 21. Advance hotel reservations indicate a record-breaking attendance, and the various convention committees have prepared a program which will adequately entitle the meeting to the name selected—Silver Jubilee Convention.

A general session on Wednesday morning will open the convention and sessions for the executives will be held in the afternoon and on Thursday morning. Governor Louis L. Emmerson will be one of the speakers at the Thursday morning session and it is expected that his address will be the feature of the convention.

The traffic conference will organize on Wednesday morning and in the afternoon and Thursday morning will hear a number of addresses on various traffic topics. A new departure will be the classroom instruction offered during these sessions.

Provision is made in the program schedule to permit everyone time to visit and inspect all the exhibits and thus connect and supplement information offered in the various convention addresses.

The program in full follows:

WEDNESDAY, NOVEMBER 20, 9:45 A. M.

Invocation, by Rev. Jerry Wallace, rector, Christ's Episcopal church, Springfield.

Address of Welcome, by J. Emil Smith, mayor of Springfield.

Response to Address of Welcome, by George X. Cannon, general manager, Stephenson County Telephone Co., Freeport.

President's Annual Address, by Louis Pitcher, president and general manager, Dixon Home Telephone Co. of Dixon.

Annual Address of General Counsel Ben B. Boynton, Springfield.

Annual Report of Secretary-Treasurer A. J. Parsons, Springfield.

Election of five members and appointment of four members of the nominating committee to nominate a list of candidates for directors, 1929-1930.

WEDNESDAY AFTERNOON, 1:30 P. M.

"Maintaining the Average," by F. B. MacKinnon, president, United States Independent Telephone Association, Chicago.

"Utility Regulation," by Charles W. Hadley, chairman, Illinois Commerce Commission, Wheaton.

"Planning Exchange Construction," by J. W. Wopat, consulting engineer, Diversified Investments, Inc., Kansas City, Mo.

"Improvement of Plant Maintenance Conditions (including power arc follow-up demonstrations)," by G. R. Francis, transmission engineer, Illinois Bell Telephone Co., Chicago.

Announcement of One of the Feature Attractions of the Illinois Silver Jubilee Convention, to be Held at Springfield.

WEDNESDAY EVENING.

Annual theater party, courtesy of Illinois Telephone Association.

Dance, Hotel Abraham Lincoln. R. A. Lumpkin, chairman, entertainment committee, master of ceremonies.

THURSDAY, NOVEMBER 21, 9:00 A. M.

"Net Profits from Good Transmission," by R. V. Achatz, general manager, Southern Indiana Telephone Co., Aurora, Ind.

"Supporting Your Trade Association," by John V. Vander Vries, manager, Chamber of Commerce of U. S. A., Chicago.

Address by Louis L. Emmerson, governor of Illinois.

"Connecting Company Relations," by T. H. Ashley, special representative, Bell Telephone Co. of Canada, Toronto.

"Furnishing Modern Telephone Service to a Small Community at a Profit," by E. R. Stonaker, consulting traffic engineer, Stromberg-Carlson Telephone Mfg. Co., Rochester, N. Y.

Reports of nominating committee and election of directors.

Reports of convention committees.

THURSDAY, 2:30 P. M.

Dramatic entertainment by Bell Players club, courtesy Illinois Bell Telephone Co., Chicago.

THURSDAY, 6:30 P. M.

Annual banquet with special surprise entertainment features, followed by annual telephone ball. R. A. Lumpkin, chairman entertainment committee, master of ceremonies.

Traffic Conference Program.

WEDNESDAY, NOVEMBER 20, 10:45 A. M.

Opening Address, by A. J. Parsons, secretary-treasurer, Illinois Telephone Association, Springfield.

Piano selection, "Dainty Daffodils," by Miss Catherine Brewer, Illinois Bell Telephone Co., Springfield.

"Getting Acquainted"—Song led by R. H. Brooks, Springfield; piano accompaniment by Mrs. Marion Watson, Springfield.

Rules, regulations and information regarding the sessions, by Mrs. Loretta Cusick, Springfield.

"The Problem of Employment and Ways of Meeting It," by O. G. Jarboe, general traffic superintendent, Illinois Commercial Telephone Co., Madison, Wis.

WEDNESDAY, 1:30 TO 4:30 P. M.

Classroom instruction.

THURSDAY, NOVEMBER 21, 9:00 A. M.

Classroom instruction.

Reading by Miss Lila Evans, Illinois Bell Telephone Co., Springfield.

"Public Relations from the Traffic Department Point of View," by R. F. Pagels, general traffic supervisor, Middle States Telephone Co., Park Ridge.

"Render Unto Caesar," by A. D. Spaulding, division traffic supervisor, Illinois Bell Telephone Co., Chicago.

Closing Address, by Mrs. Mayme Workmen, traffic supervisor, Illinois Telephone Association.

CLASSROOM INSTRUCTION, WEDNESDAY, P. M.

Classroom No. 1, Mrs. Mayme Workman, principal.

Instruction to local operators, by Miss Florence Welch, chief operator, Illinois Southeastern Telephone Co., Mattoon.

Instruction to tributary operators, by Miss Anne Barnes, special traffic representative, United States Independent Telephone Association, Des Moines, Iowa.

Instruction on "Voice Technique," by Mrs. Agnes Thompson, voice instructor, Illinois Bell Telephone Co., Centralia.

Instruction to toll center operators, by Mrs. Ida VanArsdale, district toll instructor, Illinois Bell Telephone Co., Rockford.

Qualifications to consider in selecting operators, by Miss Agnes Bruins, chief operator, Stephenson County Telephone Co., Freeport.

Classroom No. 2, Miss Ruby Green, principal.

Instruction to "Local Operators," by Miss Minnie Baber, assistant traffic supervisor, Illinois Commercial Telephone Co., Lawrenceville.

Instruction to "Tributary Operators," by Miss Irene Goodall, traffic supervisor, Illinois Telephone Co., Jacksonville.

Instruction on "Voice Technique," by Mrs. Eva O'Connor, division voice instructor, Illinois Bell Telephone Co., suburban division, Chicago.

Instruction on "Toll Center Operators," by Mrs. Mercedes McKibbin, chief operator, Illinois Bell Telephone Co., Springfield.

"Values of Uniform Methods and Standard Practices," by Miss Marie Hall, chief operator, Jerseyville Telephone Co., Jerseyville.

Classroom No. 3, Miss Catherine Sullivan, principal.

"Keeping Up the Operator's Interest," by Miss Vina Braughton, chief operator, Lincoln Telephone Co., Lincoln.

Instruction to "Local Operators," by Mrs. Agnes Davis, chief operator, Illinois Consolidated Telephone Co., Taylorville.

Instruction to "Tributary Operators,"

by Miss Anna Jungers, traffic supervisor, Illinois Commercial Telephone Co., Murphysboro.

Instruction on "Voice Technique," by Miss Florence George, voice instructor, Illinois Bell Telephone Co., Springfield.

Instruction to "Toll Center Operators," by Mrs. A. Wilson, Illinois Bell Telephone Co., Alton.

CLASSROOM INSTRUCTION, THURSDAY, A. M.

Classroom No. 1, Mrs. Mayme Workman, principal.

"Keeping Up the Operator's Interest," by Miss Mildred Hutton, chief operator, Illinois Northern Telephone Co., Monmouth.

"Toll Ticket Record Work," by Miss Anne Romine, district toll instructor, Illinois Bell Telephone Co., Peoria.

Classroom No. 2, Miss Ruby Green, principal.

"Keeping Up the Operator's Interest," by Miss Irene Palmgren, chief operator, Intra-State Telephone Co., of Galesburg.

"Toll Ticket Record Work," by Miss Mary Martin division toll instructor, Illinois Bell Telephone Co., Chicago.

Classroom No. 3, Miss Catherine Sullivan, principal.

"Qualifications to Consider in Selecting Operators," by Miss Anna Hammen, chief operator, Northwestern Illinois Utilities, Savanna.

"Toll Ticket Record Work," by Miss Catherine Sullivan, traffic supervisor, Illinois Bell Telephone Co., Chicago.

The social features of the convention include a dinner to the directors and officers of the association and their guests, a theater party, a dance on the evening of the first day, and a grand banquet and ball on the evening of the second day. A special reception and entertainment party will be held for the ladies not attending the regular convention meetings and sessions.

On the afternoon of November 21, three plays will be presented as a unit by the Bell Players club of Chicago. The members of this dramatic club are all telephone employes and are classed as the finest amateur group in the country. The titles of the plays are "Too Much Crime," by Richard Wiltis; "Memory Rose," by C. F. Bantin and "Evening Dress Indispensable," by R. Pertwee.

The first two plays named are new plays this year, and the third play is the one which was presented in the Drama League of Chicago last season. These three plays, presented as a group, offer variety to satisfy and will give the convention delegates a lively and most enjoyable two hours of dramatic entertainment.

What the Commissions Are Doing

Up-to-the-Minute News Regarding the Activities of State and Interstate Commissions, Courts and City Councils in Matters Concerning Telephone Companies—Summary of Commission Orders and Schedule of Telephone Hearings

Court Sets New York Company Return at 7 Per cent.

The New York Telephone Co. was authorized to increase its rates to earn an average of 7 per cent on its invested capital according to a decision of the special federal statutory court handed down on November 11 in the form of a 40-page report.

It is estimated that the increase permitted will amount to something in excess of $7,000,000 a year and that the additional charge on individual subscribers to telephone service will be between $6 and $10 a year.

The court decision confirms in substance the report of Isaac R. Oeland, special master, who heard first testimony in 1926. The litigation was begun in 1923 as an injunction action to stop the New York Public Service Commission from enforcing rates adopted in January of the same year. Under the schedule proposed by the commission, the return was found to be less than 6 per cent of the reproduction value of the company's properties.

The chief difference between the decision of the court and the report of the special master lies in change to 7 per cent as a reasonable rate of return on capital from the 8 per cent recommended by Mr. Oeland.

The court also ordered a sharp reduction in valuations of the telephone company property on which the return is to be based from $518,109,584 established by the master's report to $397,207,925. Whereas the master's report would have instructed the public service commission to approve rates to bring in an additional return of $21,578,078, the court's decision establishes an increase of but $7,933,866.

A portion of this decrease in additional return is attributable to the difference of 1 per cent in the rate of return allowed.

The court, in its decision, expressly states that it is not concerned in the task of rate making, which is directly in the province of the public service commission. It declares:

"The plaintiff should have the relief it seeks, and, until the commission shall have fixed the rate consistent with this opinion, the plaintiff may have temporary injunction relief and an increase of its charges to be provided for in the order to be submitted."

The recommendation of Special Master Oeland of an 8 per cent return was set aside and a 7 per cent return fixed as the minimum for the company by Presiding Judge Martin T. Manton.

"A 7 per cent return will amply assure capital and reward investment," he said. "Gas and electric light companies hitherto referred to where 8 per cent was not thought to be high, have not such monopoly and freedom from competition as does this plaintiff. These facts lead us to conclusion that a greater rate of return allowed would be unjustified."

Negotiations Resumed for Illinois Bell Chicago Franchise.

Negotiations for a franchise for the Illinois Bell Telephone Co. in Chicago were resumed on November 7. The company asked the city for a 20-year franchise, with the provision that it would be automatically renewed thereafter from year to year unless terminated through written notice by either party. Attorney Benjamin F. Goldstein, special counsel for the aldermanic committee conducting the negotiations for the city, objected saying this would be a perpetual grant.

Attorney William D. Bangs, for the company, said the attitude of the public, as reflected through legislatures and other city governments, has not been toward fixing definite terms in grants for utilities.

The point was left unsettled, to be debated again the middle of this week. The company agreed to furnish the city with data concerning its contracts with the American Telephone & Telegraph Co.

Connecticut Opposes Federal Communications Commission.

Opposition to federal control of domestic telephone and electric companies is expressed in a resolution adopted by the Connecticut Public Utilities Commission and endorsed by Governor John H. Trumbull. The resolution is directed against the passage by Congress of senate bill No. 6, introduced by Senator Couzens, of Michigan.

Governor Trumbull stated orally that he is in hearty accord with the action of the commission and the resolution has his approval. The governor said he had forwarded copies of the resolution to Connecticut's United States senators and congressmen. The full text of the resolution follows:

"Whereas, there is now pending in the Congress of the United States, senate bill No. 6, introduced by Senator Couzens of Michigan, providing for the appointment of a new federal commission with regulatory jurisdiction over communication and power utilities, and

Whereas, the creation of such a com-

800,000 ADDITIONAL TELEPHONES ARE GOING INTO USE THIS YEAR

A million and a half dollars a day

An Advertisement of the
American Telephone and Telegraph Company

MORE than 200 new Bell telephone buildings are going up this year in the United States, 800,000 additional telephones are going into use and new switchboards to care for 3,000,000 additional calls a day.

Thousands of miles of new cable, millions of miles of wire, new carrier systems, vacuum tubes and loading coils. These are a few of the things in the 1929 construction and improvement program of the Bell System which will cost more than 550 million dollars—a million and a half a day.

Telephone growth is essential to the new American civilization of better opportunity for the average man. The Bell System employs more than 400,000 workers, is owned by 450,000 stockholders, and serves the people of the nation.

Every day the Bell System is extending its lines to more people, increasing the speed and accuracy of its service, giving greater comfort and convenience in telephone use. All of this is done that each individual may get the most from this means of all inclusive and instantaneous communication and that the nation may be one neighborhood.

This is part of the telephone ideal that anyone, anywhere, shall be able to talk quickly and at reasonable cost with anyone, anywhere else. There is no standing still in the Bell System.

mission would place in the federal government regulatory control over domestic telephone and electric companies which naturally pertains to the states and now exercised by state commissions; therefore

Resolved, That the Public Utilities Commission of Connecticut is strongly opposed to the passage of said senate bill No. 6, on the ground that the industries affected are essentially intrastate in their operation, and the enactment of the proposed legislation would invade natural state rights and create a federal body for which no public demand or necessity exists."

Bell Authorized to Acquire Stock of Terre Haute, Ind., Company.

Authority to acquire additional capital stock of the Citizens Independent Telephone Co. of Terre Haute, Ind., was received November 1 by the Indiana Bell Telephone Co. from the Indiana Public Service Commission. The Indiana Bell company, which already had investments in the Terre Haute company, will pay $207,500 for 2,073 shares of common stock.

The Citizens company is controlled by the Wabash Telephone Securities Co. of Kansas City, Mo., a subsidiary of Theodore Gary & Co. Hart F. Farwell, of Terre Haute, is president of the Citizens company; C. H. Rottger and F. A. Montrose, president and vice-president of the Indiana Bell, are directors of the Terre Haute company, representing the Bell minority interest acquired when the Citizens company took over the Bell plant.

The Citizens company recently called $1,300,000 of bonded indebtedness and funded it by the issuance of preferred and common stock. The stock which the Indiana Bell company has been authorized to acquire is its pro rata share of the new stock. There is no change in the relative ownership, control or management of the Citizens company.

The company serves 15,573 subscribers in Terre Haute and vicinity.

Franchise Valid and Rates Specified Must Be Charged.

The franchise of the Clarke County Mutual Telephone Co. in Osceola, Iowa, is valid and rates provided in it must be adhered to, under a recent decision of Judge Fuller in the district court. The Clarke County company was sold some time ago to the Middle States Utilities Co.

The franchise provided that rates in excess of $1.50 a month for business telephones and $1 a month for residence telephones could not be charged, but the new owner of the properties claimed the right to increase tariffs to practically double the maximum rate of the charter provisions. The city sought to enjoin the company from establishing the rate and the court sustained it.

The company has been instructed to furnish a bond to guarantee refunds pending final adjudication of the controversy in the event the state supreme court sustains the lower one.

Asheville, N. C., Rate Case Settled By Compromise.

A compromise was reached between representatives of the Southern Bell Telephone & Telegraph Co. and officials of the city of Asheville, N. C., at Raleigh last month during progress of a hearing before the North Carolina Corporation Commission and increased telephone rates became effective for patrons of the Asheville telephone exchange.

The new rates shall remain in effect until 1931, when and if the Southern Bell company installs a new exchange and inaugurates the use of automatic telephones, then the rates originally petitioned for shall become effective.

The following is the schedule of old, new and proposed rates for the city:

	Old	New	Proposed Rates
Business, one-party	$5.00	$5.75	$6.50
Business, two-party	4.00	4.75	5.50
Residence, one-party	3.00	3.25	3.75
Residence, two-party	2.50	2.75	3.00
Residence, four-party	2.00	2.25	2.50
Business, extension	1.00	1.25	1.50
Residence, extension	.75	1.00	1.00

Under the compromise agreement, the basic Asheville charges apply to all the suburbs that were annexed to the city on July 1, 1929, and the added distance charged for users living outside the city shall be computed from the new city limits.

Increased Rates Allowed As Return Is Not Too High.

The Nebraska Railway Commission has given the Lincoln Telephone & Telegraph Co. authority to increase rates at its Fairbury exchange, although refusing to accept the contention of Engineer Wheeler for the company that reproduction new less deterioration is the sole and only factor to be given consideration in finding the fair value of the property as at present constituted.

It says that for the purpose of this case it is not necessary to make definite findings thereon. Net earnings available for dividends produce a fair return of approximately 6.5 per cent on investment or book cost. If consideration were given to reproduction new values, the percentage would be much below that figure.

Respecting the rate of return, the commission finds that the courts have spoken rather definitely, one holding 7 per cent is not too much, another that 7 per cent is necessary to prevent confiscation, and another that 6 per cent is substantially too low to constitute just compensation. Certainly, it adds, it cannot be said that a return of approximately 6.5 per cent on book cost is a higher rate of return than the applicant is legally entitled to earn.

The new rates authorized are: business, one-party, $4.25; business, two-party, $3.75; residence, one party, $2.50 and residence, two-party, $2.00. The company presented figures for comparable exchanges in Nebraska operated by the Northwestern Bell Telephone Co., and the commission finds that the proposed business rate for Fairbury is 25 cents less than on the exchanges named, residence rates are the same and farm rates, in which no change was asked, are 50 cents below. The rates used for comparison were those authorized by the federal court on an appeal by the Northwestern Bell company from a commission finding.

The Fairbury exchange serves a total of 1,407 stations in the city, exclusive of farm and special services. The property in part was purchased in 1912 from the Fairbury Telephone Co., then in competition, and dual service discontinued. Applicant owns its own building, erected ten years ago. City service is common battery and farm is metallic. The properties, according to the commission engineers who personally inspected, and appraised them, have been well maintained and are now in good physical condition.

Figures submitted by the company showed that for the last four years the percentage of return based on book cost has been: 1925, 4.94 per cent; 1926, 3.38 per cent; 1927, 3.76 per cent, and 1928, when revenues were $60,805 and expenses $50,006, the return was 4.65 per cent. These figures include revenue received from all sources, city and rural subscribers, toll allocations to the exchange on a 25 per cent basis, and miscellaneous.

The company estimate was that the new rates will give revenues of $69,569 and with expenses of $53,513, there will be available for dividends $16,056, which is close to 6.5 per cent on the book cost. The commission approves the practice of using 25 per cent of the tolls collected at an exchange as the basis of toll allocation thereto, the law providing 15 per cent on originating and 10 per cent on terminating calls. This has been found to work the same as though each were credited separately.

As to depreciation, the commission declines to adopt 6 per cent as the proper figure, being in excess of company needs. It stands by its previous findings that this should be 2.5 per cent on buildings and 6 per cent on all other property, which becomes the equivalent of about 5.5 per cent on all.

The company records show a total book or investment cost of $244,305. It presented a valuation based on reproduction new of $281,210, a condition per cent of 85, and a reproduction new less deterioration of $238,287. These do not include going concern or working capital.

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The commission refuses to accept the theory of deterioration, which gives no consideration to accrued depreciation not visible, inadequacy and obsolescence. The company engineer admitted that his figure for deterioration is something less than is commonly contemplated by the term depreciation, consideration being given only to those things visible. Adding working capital and going concern value the company asserted a total present valuation of $277,678.

Commission engineers found a reproduction new of $266,468, a condition of 78 per cent and reproduction new less depreciation of $208,572, not counting going concern value or working capital. The commission concedes the latter are proper items, but says that for the purposes of the case, since the net revenue will not be more than 6.5 per cent on the book cost, it is not necessary to go into the question of fair value, and how it shall be reckoned. The new rates became effective November 1.

Subscribers Approve Increased Rates with Improved Service.

The Nebraska State Railway Commission has allowed the Nebraska Central Telephone Co., of Gibbon, to increase its rates at its Arcadia exchange as soon as contemplated improvements are in place. D. E. McGregor, president of the company, has been following a practice that has become almost universal with the managers of all telephone companies, big and little, and approved by the state commission. That is, to present the reasons for increased rates to patrons, and secure their written consent to the commission authorizing the increase.

In the Arcadia case, 72 per cent of the patrons put down their names to a document declaring themselves in favor of the proposition set out in the beginning, and their willingness to pay the rates started as soon as the whole town has been rebuilt and the class of service promised is available.

On its part, the company agreed to completely rebuild the lines in the town, to place the cables and wires in alleys and underground where possible, to remove all poles, cables and wires from the main street through the business section; to make all lines metallic and all party lines selective ringing. The rate increase proposed was 50 cents a month on business and individual residence and 25 cents a month on party-line, selective, residence service.

The estimated cost of installing a new distribution system is $9,500, which is an increase over the present investment of $5,500. The annual charges on this for depreciation, taxes, maintenance and miscellaneous expenses, with 7 per cent interest for return, will amount to $1,045, and the estimated increased revenue will be $945. The commission finds that the proposed rates are reasonable and in view of the results of the solicitation of the subscribers, granted the request without a hearing, but subject to complaint.

Since Mr. McGregor acquired Arcadia and other properties which he has welded into his Nebraska Central properties, he has been spending freely for the purpose of putting all of them into excellent shape. He fixed up his country lines first, and meanwhile did the best he could with the old town lines. He secured a small increase two years ago for the town subscribers when the farm-line rates were raised, and at that time promised that he would not ask for any more revenues after he had modernized the plant, than would pay a reasonable return on the added investment, together with the costs of maintenance, depreciation and taxes.

The new schedule of monthly rates follows:

Business individual	$3.00
Residence, individual	2.00
Residence, party-line, selective	1.50
Singe party service outside town limits, per quarter mile or fraction	.50
Party line service outside town limits, per quarter mile or fraction	.35
Farm multi-party residence grounded	1.65
Switching service per year	6.00
Desk sets, additional	.25
Extension sets, business	1.00
Extension sets, residence	.50
Extension bells	.25
Extension gong, loud ringing	.40

Joint-user service 1½ times regular rate.

It is further ordered that the applicant shall charge revenues and credit its maintenance and depreciation reserve account annually with 10 per cent, computed on the cost of depreciable property on a monthly basis, to pay the cost of maintaining its property and the cost of plant retired from service.

It is also ordered that the new rates shall become effective when and if such contemplated improvements have been made; that applicant shall notify the commission at the time such improvements are completed and ready for inspection and approval, and that upon such approval the publication of rates will then be made by the commission without further hearing.

Commission's Decision Upholds Company's Collection Rules.

The New Jersey Board of Public Utility Commissioners, in a recent discussion, held that reasonable rules reducing to a minimum uncollectible bills should be adopted and enforced for the benefit of subscribers who do pay their bills promptly.

The commission found that on or about February 24, 1929, the New Jersey Bell Telephone Co. sent a bill to its subscriber, Frank M. Farrell, which was not paid up to March 15, when the service was cancelled.

During the hearing on the complaint Mr. Farrell stated that he desired that the board should order restoration of service prior to the payment of the amounts due the company and that he should be reassigned the same telephone number which he had prior to the discontinuance of service.

The commission found that in rendering a bill for service rendered prior to February 23, the date of making the bill, the company followed its rule made and provided for such billing and in accordance with the provision of the contract for service. The company was within its rights in so billing and might have, in the absence of Mr. Farrell's establishing credit with the company, required a reasonable deposit to secure payment of toll bills just as it required advance payment with respect to local service charges.

The company did not, however, request a deposit from Mr. Farrell nor did it act until his toll charges for the month exceeded $15, which is the amount of credit generally extended, under the company's practice, to a customer whose credit has not been established to the satisfaction of the company.

The commission said: "If the company did not adopt some such measure to protect itself from unduly large extensions of credit, this practice would tend to increase the amount of uncollectible bills of subscribers, the number of which would tend to increase in proportion to the amount of credit extended. Such unpaid or uncollectible bills are charged to the company's expenses which constitute one element in fixing rates. Such bills not paid by the subscriber who receives the service are, therefore, in the final analysis, pro rated to paying subscribers not so benefited."

The commission further found that the credit status of Mr. Farrell had not been established to the satisfaction of the company; that he had made unusual use of the telephone service for toll calls, thus increasing the amount of credit extended from the company; that the protective rule incorporated in the contract signed by the complainant had been followed by the company and that the complainant had not on request written and telephoned, responded, nor had he yet paid the bills rendered for service, the aggregate amount of which was not disputed by him. The company was willing and desired to reestablish service to complainant upon the payment of the outstanding charges and was willing to waive the customary service connection charge.

Reasonable rules reducing to a minimum uncollectible bills should be adopted and enforced, the commission held, for the benefit of the great body of subscribers who do pay their bills promptly, and the rule questioned by the complainant falls within this category.

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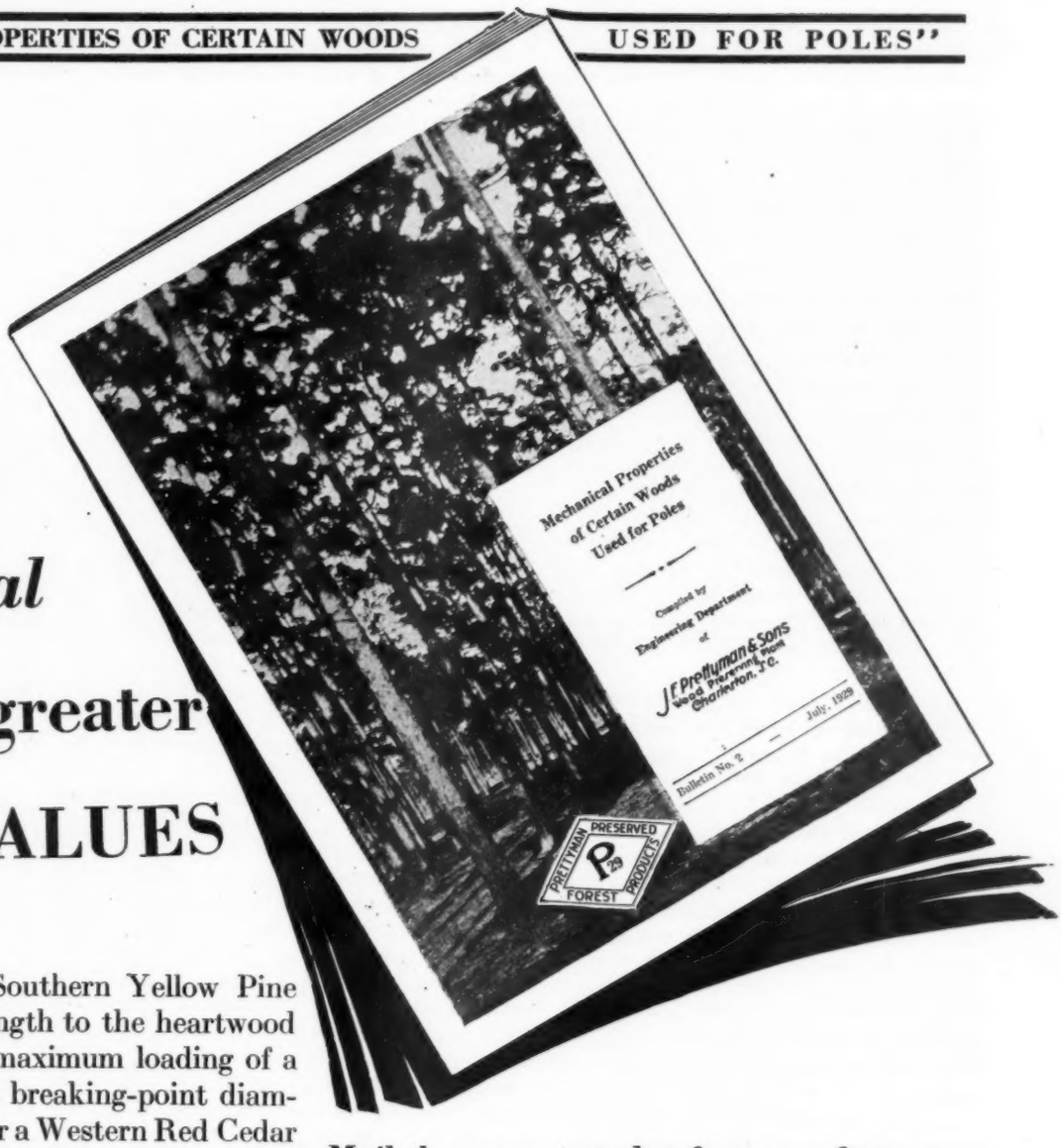
Mechanical Properties of Certain Woods Used for Poles
Compiled by Engineering Department of
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In view of the fact that the telephone number formerly assigned to Mr. Farrell had been assigned to another subscriber, the commission decided, it would not be practicable to deprive this later subscriber in good standing of this call number and reassign the same to Mr. Farrell.

In view of the foregoing circumstances, the complaint was dismissed.

Better Service Probable As Result of Bell Acquisition.

The Hackettstown Telephone & Telegraph Co., serving approximately 810 subscriber stations at Hackettstown, N. J., was recently taken over by the New Jersey Bell Telephone Co., the acquisition being authorized by the Interstate Commerce Commission.

By a contract dated December 22, 1928, the Bell company agreed to purchase the properties of the Hackettstown company free and clear of all judgments, liens, and encumbrances of any kind for $81,150 in cash.

An appraisal made by an engineer of the Bell company found the reproduction cost new of the properties to be $91,849, and less depreciation $70,611.

The balance sheet of the Hackettstown company as of December 31, 1928, showed capital investment to be $53,195, current assets $33,174, deferred debits $92, capital stock $27,050, current liabilities $1,199, accrued liabilities, not due, $704, reserve for accrued depreciation $23,971, and surplus and undivided profits $23,537. Capital stock consists of 1,082 shares of the par value of $25 each, of which 396 shares or approximately 38 per cent are owned by the Bell company.

In 1928, operating revenues and operating expenses of the Hackettstown company were $27,433 and $17,805, respectively.

The commission believed that the acquisition of the properties by the Bell company will result in more efficient and adequate telephone service to the public and will be of advantage to the persons to whom service is to be rendered and in the public interest.

Wisconsin Company Ordered to Make Extension of Its Lines.

The Wisconsin Railroad Commission, in a recent decision, found that public convenience and necessity required the extension of the lines of the Wisconsin Telephone Co. to serve applicants in the town of Waupun.

Informal complaint was made to the commission by A. J. Chapin, F. H. Brinkeroff and Charles Polloch that they have been unable to secure telephone service from the Waupun exchange of the Wisconsin Telephone Co.

The three applicants are neighbors who are all receiving service from the Brandon-Ladoga Telephone Co. This company has switched service at the Brandon exchange and also has access to a small switchboard at Ladoga. Ladoga is a small unincorporated hamlet located about three miles from the residences of the applicants.

The applicants transact the greater part of their business at Waupun, and for the most part their social relationships are with patrons of the system of the Wisconsin Telephone Co. at Waupun.

The commission found that public convenience and necessity require the extension of the lines of the Wisconsin Telephone Co. to serve the applicants, A. J. Chapin, F. H. Brinkerhoff and Charles Polloch in Waupun and therefore ordered the extension to be made.

Application Asking for Service Duplication Dismissed.

The Wisconsin Railroad Commission recently dismissed the application of the New Rockland Telephone Co. for a declaration that public convenience and necessity required the rendering of telephone service by it in the village of Reedsville, as a second public utility.

The testimony showed that the New Rockland Telephone Co. formerly was furnished switching service by the Consolidated Telephone Co. and its predecessor at Reedsville at the switchboard of the latter company in that village.

About a year ago the New Rockland Telephone Co. discontinued the switching arrangement with the Consolidated Telephone Co. and installed its own exchange outside the village limits and has since operated this exchange. A physical connection between the two exchanges was provided and a 10-cent toll established.

The present application resulted from a petition presented to the New Rockland Telephone Co. by residents of the village of Reedsville, requesting that company to extend its lines to serve them.

The testimony offered by residents of Reedsville indicated that the merchants of that village were greatly inconvenienced by reason of the fact that many of the subscribers of the New Rockland company living in the area naturally tributary to Reedsville are their patrons and that it is impossible for them to call their patrons or be called by them without the payment of a 10 cent toll.

The authorization of duplicated telephone service in the village of Reedsville, as requested in the application, would, in the opinion of the commission, result in uneconomical expenditure, and would not bring about a situation productive of adequate service to the public

The New Rockland company has seen fit to exercise its lawful right to withdraw from the arrangement formerly maintained with the Consolidated company, the commission said, whereby communication with the surrounding territory directly from the village exchange was provided.

The commission is without authority to compel the New Rockland company to resume its relations with the Consolidated company.

The commission found that public convenience and necessity do not require the rendering of local telephone service by the New Rockland Telephone Co. in the village of Reedsville as a second utility, and therefore dismissed the application

Summary of Commission Rulings and Schedule of Hearings.

INTERSTATE COMMERCE COMMISSION.

November 15: Hearing at Washington in the matter of the petition of the Ohio Bell Telephone Co. for authority to purchase the properties of the Wintersville Telephone Co., Wintersville, Jefferson county, Ohio, for the sum of $3,000.

November 15: Hearing in the matter of the petition of the New Jersey Bell Telephone Co. for authority to acquire the properties in the Middlesex Telephone Co. located at Monmouth Junction, N. J, for the sum of $40,000.

CALIFORNIA.

November 6: Associated Telephone Co., Ltd., authorized to establish on or before eight months from date an automatic or dial system telephone exchange at New Westminster, Orange county, furnishing continuous 24-hour service in an exchange area embracing that town and vicinity, at rates fixed by the commission. Toll rates authorized from the proposed exchange include a 10-cent rate to Huntington Beach, no change in rate from this area to Santa Ana, and some reductions in the rates to Long Beach, Anaheim, Whittier and other points. The toll rate plan proposed is that which is now generally effective throughout the state of California.

In authorizing the establishment of the proposed separate exchange in the territory involved, the commission makes the following statement:

"In reaching this conclusion we are not unmindful of evidence submitted which indicated that the telephone company in the past did not fully meet its public utility obligation to furnish adequate telephone service in the area under consideration. Applicant will be expected to establish better public relations for the future and to promptly install any type of telephone service offered by it, and thereafter give due diligence to the maintenance of its plant and facilities."

November 7: Order issued granting Pacific Telephone & Telegraph Co. an increase in rates in San Francisco and the East Bay amounting to $2,100,000, approximately 30 per cent of amount asked; and decreasing rates in the Los Angeles area amounting to a total of $2,310,000 based on 1929 business. In the first case the company's rate of return on its investment is raised from 3.87 per cent to approximately 7 per cent and in the second decreased from over 9 per cent to a normal basis. The order becomes effective January 1, 1930.

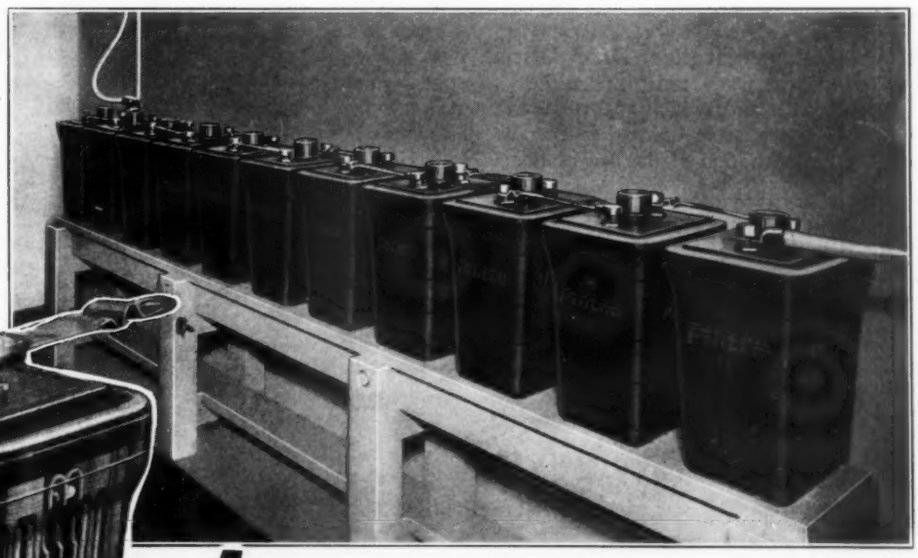
ILLINOIS.

October 28: Order approved extending period of suspension of proposed increased rates of the Illinois Northern Telephone Co. in Macomb. The suspension order will be effective to April 30, 1930.

(*Please turn to page* 46)

ELECTRICAL AND MECHANICAL PERFECTION!

22 Volt 280 A. H., 15 EPG Philco Spray-Proof Telephone Battery in Steel-Glass. Rochester Telephone Company, Rochester, New York.



√ Philco Processed Plates

WHAT? THE KEYSTONE OF ELECTRICAL PERFECTION AND LONG LIFE! Philco's patented process produces plates of more uniform Hardness, Porosity and High Capacity. Twenty-three years of Philco specialization have perfected this advanced method of plate manufacture. *Field performance has emphasized perfection.*

HOW? The Diamond Grid (plate frame) is filled with a blend of specially prepared lead oxides and acid, *then* dehydrated (dried quickly) in a chamber of superheated steam under 675 lbs. pressure. *Thermostatic control of temperature and close technical control of the entire process insures absolute uniformity.*

WHY? SEPARATE OPINIONS FROM FACTS! Space today is at a premium. Modern conditions demand Reliable, Long-life, High-capacity, Spray-proof Power Batteries *Mechanically Strong* at Reasonable Cost.

PHILCO LEADS IN DEVELOPMENT TO MEET MODERN DEMAND

WATCH THE 11 SUPERIORITY POINTS, M-O-N-T-H - B-Y - M-O-N-T-H

THE 11 POINTS TO PHILCO . . .

1. STEEL-GLASS
2. Corner and Side Locks.
3. Diamond Grids.
4. √ **Philco Processed Plates**
5. Philco Slotted Retainers.
6. Quarter-Sawed Hardwood Separators.
7. Spray-Proof Funnel Vents.
8. Built-in Charge Indicators and Thermometer.
9. Burned-Bolted Connectors.
10. Shipped Fully Charged.
11. Lowest Space Installation and Maintenance Cost.

PHILCO

DIAMOND GRID BATTERIES

Philadelphia Storage Battery Company, *Power Division*:
Ontario and C Streets, Philadelphia, Pa.

Please send me Bulletin No. 956 describing in complete detail Philco Spray-Proof Telephone Batteries in Steel-Glass.

Name .....

Street .....

City ..... *State* .....

TUNE IN ON THE "PHILCO HOUR"

With the Manufacturers and Jobbers

New Kellogg Bronze Drop Wire Interestingly Demonstrated.

A most interesting exhibit at the national telephone convention in Chicago last month was the demonstration of the new Kellogg bronze drop wire. The outstanding feature about this new type of bronze wire is its high conductivity.

An apparatus was hooked up, right in the exhibition booth, by which to measure the resistance of a tenth of a mile of the wire. This strikingly brought out that this new type of bronze wire has a resistance of only 32 ohms per mile.

Bronze has long been experimented with as material for drop wire, but previously it has been too stiff and of too high resistance to be satisfactory. This new type of bronze wire, it is stated, has conductivity equal to 85 per cent of No. 17 copper and has greater tensile strength and great flexibility. In addition it has a good reclaim value.

The Kellogg Switchboard & Supply Co. has had a great deal of success in introducing this new drop wire in the Independent telephone field.

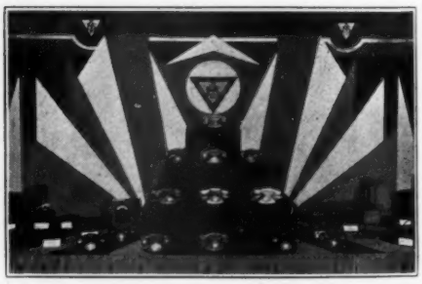
Kellogg Exhibit of New Bronze Drop Wire at Recent National Convention in Chicago.

View of the American Electric Co. Exhibit at the Recent National Convention. The Walls and Pillars of This Exhibit Were Attractively Decorated with a Two-Toned Green Material Embellished with the American Electric Monogram.

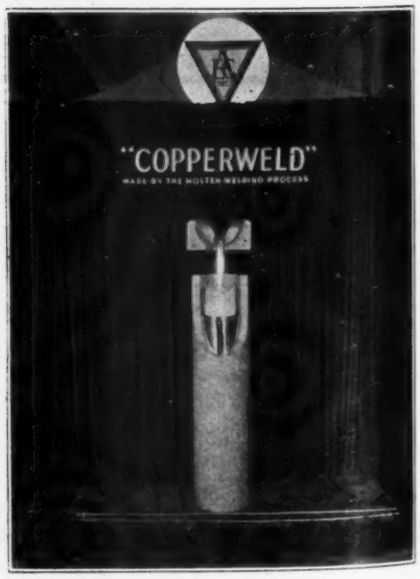
Stromberg-Carlson's Growth Requires Additional Space.

The large volume of business that is flowing to the Stromberg-Carlson Telephone Mfg. Co. at Rochester, N. Y., has necessitated postponement of the relinquishment of the old plant, and a lease on the property for another year has been signed.

When the new million-dollar Stromberg-Carlson plant, which was opened this year, was contemplated and constructed, it was calculated that it would suffice for the manufacturing activities of the company for several years, but the business has been on so decided an upward swing that retention of all manufacturing facilities are necessary to keep up with the volume



A Specially-Constructed Display Stand Was Built for Showing Colored Monophone and Other Telephones in the Exhibit of the American Electric Co., Inc.



Another Feature of the American Electric Exhibit at the National Convention Was This Copperweld Display, Which Showed the Basic Principle of Copperweld Manufacture with the Copper Formed Around the Steel Billet as a Center.

Poles from the forest instead of the market

A FEATURE of the BROWN "new deal in poles" is the fact that this organization raises its own poles, instead of going to the expense of buying them on the open market.

This does more than eliminate an outside profit—it enables BROWN to safeguard quality and deliveries in a manner that other pole concerns without these facilities could not approach.

This is just one of the advantages of operating on a "one-organization-straight-through" basis. From the forest to outbound railroad yards, BROWN Dense Southern Yellow Pine Creosoted Poles are handled and produced by this organization's own men and equipment.

Uniform quality, prompt delivery, and all at no higher cost are advantages offered to telephone company pole buyers.

Creosoting Department

W. P. BROWN & SONS LUMBER CO., Inc.

Fourth and K Streets, Louisville, Kentucky

Telephone: Magnolia 2407

BROWN

CREOSOTED YELLOW PINE PRODUCTS

300,000 Acres One of the largest

Individual Holdings in America

of orders. Even with the new plant in complete operation, some of the departments are pressed for space.

While no definite decision has been made to add to the new plant, W. R. McCanne, president and general manager of the company, has necessarily given thought to expansion. The purchase of 15 additional acres of land, adjoining the new plant, has been announced by officials of company. This addition is west of the new plant and is ideally situated, as it is along the sidetrack of the New York Central Railroad which serves Stromberg-Carlson. The purchase of this land brings the total number of acres owned by the company to 43, all located at the new factory.

Stromberg-Carlson Telephone Display at Recent Annual Convention of the United States Independent Telephone Association in the Stevens Hotel.

At present the company is using the new plant, which measures 625 feet by 460 feet and covers approximately 360,000 square feet of floor space, and also the old factory which covers 190,000 square feet. The new plant is a single building, one story high, divided into four units, with a basement under one of them. The four units are separated by fireproof walls.

Monitor type of construction is used in this plant. Fifteen monitors like great troughs with windows on either side run through the building from east to west, with supporting trusses within the monitors themselves, covering spans of 60 feet in most places, but of 100 feet in one section of the plant.

Such construction makes possible a wider space without supporting parts and thus increases clear space in the factory. The reduction in the number of parts makes possible the efficient placing of machinery and benches. Another advantage of the Stromberg-Carlson monitor type of building is that it insures perfect light to every part of the working area.

The volume of business and the earnings of the company are at peak. The last six months of 1928 were the greatest in its history. This year will break all records, running about 20 per cent in volume of sales over 1926, the former banner year in the company's history.

The management of the company under President McCanne is regarded as most progressive, yet squaring with the most conservative and highest standards of sound business. The company is controlled by its employes, the greatest amount of stock being owned by persons actively identified with it. There are 267,280 shares outstanding, and the amount in the hands of the public is negligible. The stock is held, it is pointed out, by the persons growing with the company.

The volume of business ahead indicates that 1930 will be an excellent telephone year. The company finds it difficult to keep up with orders and a night force is working at the new plant. There are 1,850 employes engaged by the company at the present time, establishing a new high record of employment.

Announce Winners of Colored Monophones at Convention.

More than 300 visitors, most of them representatives of Independent telephone companies, registered at the exhibit of Automatic Electric Inc., at the national convention last month in Chicago.

A feature of unusual interest in connection with this company's exhibit was the daily award of a colored monophone. Each registrant was given a numbered ticket, the duplicate of which was filled in with his name and address and dropped in a jar. At the end of each day's session the holder of one of the tickets was privileged to choose a colored monophone from among the company's complete line.

The winners for the four days were: H. M. Allen, Portsmouth Home Telephone Co., Porthmouth, Ohio; A. H. Bowden, Almond Telephone Co., Almond, Wis.; B. L. Fisher, Lee Telephone Co., Rocky Mount, Va., and Mrs. W. R. Brown, Lafayette Telephone Co., Lafayette, Ind.

More FWD Line Construction Trucks Purchased by Bell.

Among the orders for FWD line construction trucks the first week of this month is one from the Pacific Telephone & Telegraph Co. and another from American Telephone & Telegraph Co. for the long lines department in Chicago Both orders call for the BTL models which are line construction trucks from stem to stern.

The Pacific Telephone & Telegraph Co. purchased its first FWD in 1926. Another FWD followed in 1927. Then 31 in 1928 and this year already 24 more FWD's are doing the line construction work for this company. This does not include the large fleet of FWD's of the Southern California Telephone Co.

The A. T. & T. long lines department at Chicago became acquainted with the FWD about a year ago and has ordered FWD's a half-dozen times since.

Prices in the Metal Markets.

New York, November 11.—Copper—Quiet; electrolytic, spot and future, 18c. Tin—Easy; spot and nearby, $39.12; future, $39.50. Lead—Quiet; spot New York, 6.25c; East St. Louis, 6.10c.

Views of Exhibit of Automatic Electric Inc. at Recent National Convention.

AMERICAN STEEL & WIRE COMPANY

PERFECTED

Telegraph *and* Telephone Wire

SERVICE MUST BE MAINTAINED

Whether it hails, rains, or freezes, your lineman, your trouble shooter is on the job to maintain service.

—and Perfected Telegraph and Telephone Wire has the same good qualities. Its in-built quality comes out in dependable performance. Our new process of tight zinc galvanizing makes it ideal for service. The smooth deeply laid zinc is as flexible as the wire itself, assuring impenetrable protection.

For the good of the service insist on Perfected Telegraph & Telephone Wire—produced in the standard reliable Brands "Extra BB", "BB" and "Steel."

Perfected Extra BB | Perfected BB | Perfected Steel | Perfected Strand

American Steel & Wire Company

Subsidiary of United States Steel Corporation

208 S. La Salle Street, Chicago — 30 Church Street, New York

Other Sales Offices: Boston, Cleveland, Worcester, Philadelphia, Pittsburgh, Buffalo, Detroit, Cincinnati, Baltimore, Wilkes-Barre, St. Louis, Kansas City, Minneapolis-St. Paul, Oklahoma City, Birmingham, Atlanta, Memphis, Dallas, Denver, Salt Lake City. U. S. Steel Products Company: San Francisco, Los Angeles, Portland, Seattle. *Export Distributors:* United States Steel Products Co., 30 Church St., New York.

A Saving
on **EVERY BATTERY**

WHEN you purchase Storm Kings you obtain "A longer life cell." Thus—a saving on every battery. And Storm King is a cell made exactly to telephone requirements.

STORM KING batteries have developed a new insulating material, more highly absorbent than any other, which will retain the chemical solution much longer than anything so far developed. The result is the longest service life ever developed in a telephone battery and this in turn means substantial savings to telephone companies in cutting down renewal costs to a new low point.

Manufactured by
GENERAL DRY BATTERIES, INC.
Cleveland, Ohio

Distributors:
A. J. Johnson Elec. Co., Chicago, Ill.
W. S. Nott Company, Minneapolis, Minn.
Suttle Equipment Co., Lawrenceville, Ill.

(*Concluded from page* 40)

November 12: Hearing at Chicago in the matter of the proposed rates for service of the Illinois Bell Telephone Co. in Chicago, stated in rate schedule Ill. C. C. No. 1, sheet 22, of Illinois Bell Telephone Co.

November 14: Hearing in the matter of the proposed advance in rates for toll service of the Dixon Home Telephone Co. in Dixon and vicinity, stated in rate schedule Ill. C. C. No. 1, filed by the company; also in the matter of the approval of the traffic agreement entered into between the Dixon Home Telephone Co. and the Farmers Telephone Co. of Lee county covering interchange of toll service in Lee county.

INDIANA.

November 1: Indiana Bell Telephone Co. authorized to acquire additional capital stock of the Citizens Independent Telephone Co., of Terre Haute, being its pro rata share of new stock just issued.

November 1: Application granted of the Farmers & Merchants Telephone Co., of Hillsboro, to increase its rates.

KANSAS.

October 28: Application granted of Central Kansas Telephone Co. for permission to discontinue the telephone exchange at Fairport, Russell county.

October 28: Application granted of Chas. S. Rood of Harper for a certificate of convenience and authority to transact the business of a telephone utility at Belvidere, to go into effect on country lines as soon as amended petition is filed and map furnished covering the territory.

November 12: Hearing at Topeka in the matter of application of the Elkhart Telephone Co. for permission to sell its plant and property at Elkhart to the Western Telephone Co.

November 12: Hearing on application of Western Telephone Co. for a certificate of convenience and authority to transact the business of a telephone utility at Elkhart.

MICHIGAN.

October 24: Michigan Home Telephone Co. filed application for permission to increase rates in Muskegon, Muskegon Heights and North Muskegon.

MISSOURI.

November 4: Application approved of Middle States Utilities Co. of Mo. for permission to reestablish a switchboard at St. Patrick and file rate schedule therefor.

November 4: Application approved of Ozark Central Telephone Co. for a certificate of convenience and necessity to operate an exchange at Bakersfield.

November 4: Sweet Springs Telephone Co. authorized to file with the commission a schedule of rates containing the increase as asked for in the application and the collection rules such as are now on file governing exchange at Sweet Springs, effective December 1.

November 6: Christian County Farmers Rural Telephone Association authorized to file with the commission a schedule of rates and rules and regulations governing its relations with its subscribers and the general public.

November 8: Southwestern Bell Telephone Co. authorized to file its schedule of rates and charges for service at its Norborne exchange in accordance with the petition filed, with the exception that for residence extension, for which 50 cents per month will be allowed, the rates to become effective on the first day of the calendar month after the work of rebuilding and changing the plant at Norborne has been completed.

November 8: West Plains Telephone Co. authorized to transfer to the Western Telephone Corp. of Mo. all of the property of the West Plains Telephone Exchange, together with all franchise rights, for the sum of $116,000.

NORTH CAROLINA.

October 16: Approval given schedule of increased rates for Asheville, as agreed upon by city authorities and representatives of the Southern Bell Telephone & Telegraph Co.

NORTH DAKOTA.

October 11: Application denied of Clayton Farmers Telephone Co. of Bowbells for a certificate to construct and operate a telephone line in Clayton township, Burke county.

October 11: Application denied of Farmers & Merchants Telephone Co. of Flaxton for a certificate to run a line from Flaxton to Northgate to be used exclusively for connecting line 10 of the Lewis Mutual Telephone Co. of Northgate and for switching telephone subscribers on that line, but the company was granted a certificate to add an additional line to serve its own subscribers.

October 11: First revised local exchange tariff for Steel, filed by Northwestern Bell Telephone Co., approved.

October 11: Parshall Farmers Telephone Co., Parshall, filed application for authority to establish 24-hour service in Parshall and increase its exchange rates.

October 16: Joint application granted of Amenia Telephone Co. and L. F. Chaffee to sell and buy, respectively, the telephone property at Chaffee.

October 16: Application granted of Brisbane-Lark Farmers Telephone Co. for authority to build an additional two miles of telephone line.

October 21: Application filed by William Clifford, Mohall, for permission to buy the telephone property of the Home Telephone Co. at Sykeston.

OHIO.

October 19: The Lorain Telephone Co., of Lorain, applied for authority to issue and dispose of the following securities: 6 per cent preferred stock, with a par value of $100,000, to be sold at par, and 1,750 shares of no-par stock, to be sold at $53 per share, or at such other price as may be fixed by the commission.

PENNSYLVANIA.

October 24: A general revision of rates tending upward, for telephone subscribers in Central Pennsylvania proposed to commission as a part of the plan for separation of territories of the Bell Telephone Co. of Pa. and its competitor, the Cumberland Valley Telephone Co.

The new tariffs will be necessary, officials of the two companies testified before the commission, to carry the suggested property interchange into effect. The transaction involves property valued at nearly $2,000,000 and embraces 24 telephone exchanges.

TENNESSEE.

October 29: Hearing on the application of the Gainsboro Telephone Co. to close its Davidson exchange and furnish service to its former exchange customers through Monterey.

WISCONSIN.

October 26: Extension of lines of the Wisconsin Telephone Co. authorized to serve A. J. Chapin, F. H. Brinkerhoff and Charles Polloch in the town of Waupun.

October 26: Application dismissed by New Rockland Telephone Co. for a declaration that public convenience and necessity require the rendering of service by it in the village of Reedsville, as a second public utility.

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Preferred and Participating Stocks

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Franklin 0930	Harrison 0772	Central 8796	6-0321

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SPECIAL VACUUM TUBES

For the rigid requirements of Telephone Repeaters and Amplifiers, Special characteristics, together with longer life, insure a minimum "replacement" problem.

Grid, Plate and Filament are designed to produce *maximum* efficiency under actual operating conditions.

Zetka Special Tubes *cost* more—and are *worth* more.

Send us *your* specifications and operating conditions. We will be glad to cooperate with you to increase your efficiency.

Radio Utilities Corporation

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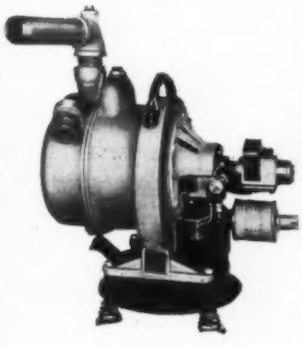
They cut costs—

Homelite Blower

Ample air . . . 2000 cu.ft. per min. Light and easy to carry 75 lbs. Complete with built-in Homelite air-cooled gasoline engine.

Homelite Self Priming Centrifugal Pump



Pumps 6000 gal. per hr.—or seepage of 1 gal. per hr. if that's all there is. If the hole goes dry you needn't stop the engine—it's air-cooled. less than 100 lbs. — portable by one man.

Homelite Generator

With built-in Homelite air-cooled engine, weighs 110 lbs. Supplies 110 volts D.C. Capacity 600 watts . . . ample for electric tools, etc.

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Condensed Telephone News

Officers of Companies Are Urgently Requested to Forward to Us Promptly All Financial and Other Statements as Soon as Issued and Any Items Relating to Construction, Rebuilding, or Changes in Their Plants and Systems

New Incorporations and New Telephone Companies.

ROCHESTER, IND.—The Rochester Telephone Co. has filed reorganization papers under the name of Rochester Telephone Co., Inc., with capital stock of 250 shares having a par value of $100, and $29,750 shares having no par value. The officers are Henry A. Barnhart, Tully Pontius, Belle Bernetha, Roscoe D. Pontius and George W. Hohman.

Officials of the company stated that the action was taken to comply with the new utility reorganization law passed by the last legislature to provide additional stock to be sold to meet the purchase and rebuilding expenses of the Talma, Whippoorwill and Loyal exchanges; to provide some treasury stock to be held for future sale in the event the company must have more funds hereinafter to acquire additional property or construct a new telephone building; and to replace an outstanding bond issue with preferred stock.

Most of the total issue asked, it is stated, is to cover an already in existence capitalization of the plant and get the entire organization within the provisions of the new law which was passed to codify all previous stock issue enactments for public utilities.

KOSSUTH, IOWA—The County Mutual Telephone Co., operating 42 years in this community, has renewed its corporate period and adopted amended articles of its incorporation, re-electing H. J. Bode, as president, and J. O. Paxson, secretary.

MILES CITY, MONT.—With about 70 per cent of the stock subscribed and contemplating an expenditure of approximately $10,000, an organization known as the Upper Box Elder Telephone Co. has been organized in southeastern Montana. The proposed line will run from Piniele, Carter county, to Camp Crook, just over the line in northwestern South Dakota.

In the election the following were chosen as directors: John H. Johnston, Hans Lukken, Irvin Richards, William Tauck, William L. Mahnken, Horace Genre and A. C. Frohlich. Officers are A. C. Frohlich, president; Irvin Richards, vice-president and Mrs. Grace Naugle, secretary-treasurer.

Financial.

MADISON, WIS.—The Northwest Telephone Co., is increasing its capital stock to $900,000, it is stated.

Elections.

FREEBURG, ILL.—The Turkey Hill Telephone Co. has elected George Procasky as president and Henry Wagner secretary-treasurer, for the coming year.

MAQUON, ILL.—The Maquon Southwest Telephone Co. held a meeting recently and reorganized and elected the following officers: President, Lewis Rambo; secretary and treasurer, O. B. Ouderkirk; Walter Platt, John Polhemus and Will Clark, directors.

GUTTENBERG, IOWA—At the annual meeting of the Garnaville & Garber Farmers Telephone Co., the following officers were elected for the coming year. President, V. A. Hyde; vice-president, Edward Rodenberg; secretary, William Rodenberg; treasurer, Henry Kann. Directors, Louis Kothe, Fred Clefish and George Heck, Jr.

Construction.

DOTHAN, ALA.—H. C. Calvin, manager of the Standard Telephone & Telegraph Co. has announced that the contract for work on the company's proposed new building has been let for the sum of $33,000.

ALEDO, ILL.—Plans for an improvement in the line and equipment of the Aledo telephone exchange, to cost $25,000 or more, were announced by Charles Holsclaw, manager of the Western Illinois Telephone Co., here recently.

The improvement will mean establish-

TREE Trimming Costs Reduced With BARTLETT Tools

For real efficiency, ease of operation and a neat, attractive job — use a Bartlett tree trimmer.

There are no interfering levers on the cutting head of the Bartlett. The compound principle insures greater power.

Bartlett points of superiority are:

1—A tool steel drop forged blade.
2—A hardened hook (will not bend).
3—Pole of highest grade Sitka spruce.
4—Cuts 1¼" branches
5—The rope pull and lever give additional power.
6—Head of trimmer will not gum up.

BARTLETT MFG. CO.
3003 East Grand Blvd., Detroit, Mich.

The *Handyman*— Pole Pusher

NO digging around the leaning pole — no back straining — only one man required. A real saver of time, labor and strength. Straightens leaning poles, takes slack out of wires on corners, moves pole through trench on resetting, holds pole straight while pulling. Light enough for one man to carry and operate. Write for folder and prices.

Harrah Manufacturing Company
Dept. T, Bloomfield, Ind.

A Complete Pole Service

Yellow Pine . . .
Full length pressure treated with Zinc Meta Arsenite. Plant at Augusta, Georgia.

Cedar . . . . . .
Western Red and Northern White "Butt Treated" by the open tank method with creosoted oil. Plants at Athens, Ohio, Spokane, Washington, and Minneapolis, Minn.

Chestnut . . . . .
Southern Chestnut "Butt Treated" by open tank method with creosote oil. Plants at Athens, Ohio, and Belington, West Virginia.

The Frankfort Lumber Co.
Sales Offices
Columbus, Ohio.....21 East State Street
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TELERING

For Central Office and PBX Ringing

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IDEAL WAVE FORM

ORDER ONE ON TRIAL.

NO OBLIGATION TO KEEP

Fully Guaranteed

Converts 60 Cycle Lighting Current to 20 Cycle Ringing Current.

POSITIVELY NO RADIO INTERFERENCE

Very low current consumption.

Model EX-3 has been proven the ideal ringing machine by hundreds of satisfied users.

Price $44.00 — F. O. B. Elyria
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Only $12.00

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Mitchell's

Principles and Practice of Telephony

These five books place thousands of practical facts at your command for instant use.

Beginning with a comprehensive survey of the basic principles involved, the author discusses such subjects as telephone apparatus, circuit elements and analysis, typical cord combinations, telephone power plant equipment, coil winding, the toll switchboard and toll equipment in the multiple office.

You learn about toll trunking, the nature and laws of telephone traffic, machine and automatic ringing, call distribution, trunk mechanical switching, mechanical-manual switching, etc.

All these subjects with scores of others, equally important, are treated in detail. Illustrations are used freely throughout the books, and a comprehensive index enables the reader to put his finger immediately on any desired fact.

To earn an expert's pay, you know that an expert's knowledge is necessary. With these books you get the combined experience of many telephone experts—down in black and white, with 317 illustrations to help you.

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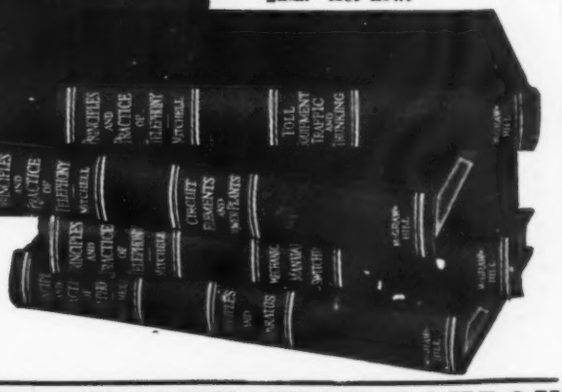
Mail the Coupon!

Send for These Five Practical Books to Examine Free

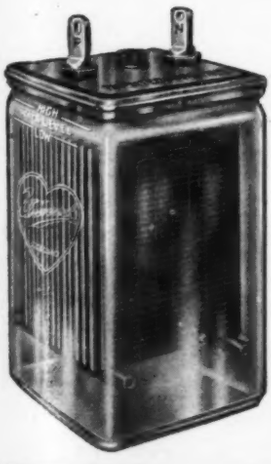
Look over the books and if they are not all we said they are return them at our expense. If you want to keep them, $3 in ten days and $2.00 a month for five months will pay for them.

Nothing to lose—everything to gain. Act now.



Act Now

An Important Part *of the* TELEPHONE ..SERVICE..



Good telephone service is dependent on good batteries. Universal Batteries have proved their dependability. Many features make them particularly adapted to telephone use.

Write for complete information and specifications.

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ment of service to business houses from the underground cable system, with entrance to buildings being made in the rear, or from alleys where possible.

MAQUON, ILL.—Reorganization and a program of rehabilitation of lines 63, 69 and 74, of the Maquon Southwest Telephone Co. were effected at a recent meeting of stockholders and officers. Poles and wires on these lines are down in several places and service is impossible under present conditions. An assessment was made upon each telephone owner and funds raised to repair the lines. The three systems will be merged into two lines under the new program.

BOSTON, MASS.—At its regular monthly appropriation meeting in October, the executive committee of the New England Telephone & Telegraph Co. approved the expenditure of $1,954,117 for new construction and improvements in plant necessary to meet the demand for service. Including this authorization, the total commitment of the company for plant expenditures this year is $35,569,029.

For Maine the appropriations aggregate $293,233; for New Hampshire, $59,280; for Vermont, $81,559; for Massachusetts, $1,365,830; for Rhode Island, $154,215.

Of the amount just authorized $402,168 will be expended for central office equipment, $271,141 for toll lines, $177,806 for exchange lines, $34,392 for station equipment, and $1,068,610 to cover the total cost of hundreds of routine additions to plant in all parts of the company's territory during November.

NEW YORK, N. Y.—J. S. McCulloh, president of the New York Telephone Co. announced October 25 that the board of directors has authorized the additional expenditure of $7,978,200 for new construction in various parts of the territory served by the company. This brings the total amount appropriated for this purpose since January 1 to $93,557,657, of which $81,618,245 has been set aside for enlargement of facilities in the metropolitan district.

PORTSMOUTH, OHIO—The Portsmouth Telephone Co. has completed the rebuilding of the Portsmouth-Greenup lines through Fullerton. They were placed in service November 1. There are two lines going from Portsmouth to Ashland, Ky., and one of them joins on the Fullerton switchboard. This service has been given in a temporary way for the past year through Ironton. Highway work caused building of the main lines to be delayed.

Miscellaneous.

FREEPORT, ILL.—Stockholders of the Polo Telephone Co., Coleta Telephone Co., Pearl City Independent Telephone Co. and Lancaster & Cedarville Telephone Co., at a meeting here, approved the plan to sell the assets of the companies to a new corporation to be known as the Northwest Telephone Co., which will merge the companies within a few months if the plan is given the sanction of the state commerce commission.

Incorporators of the Northwest company are George X. Cannon, Dr. C. L. Best and W. A. Hance, all of Freeport,

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who had large interests in all the companies to be consolidated. The Pitcher company serves several towns in Jo Daviess county and the Pearl City company also serves Lena and McConnell.

MURPHYSBORO, ILL.—The Illinois Commercial Telephone Co. announces the adoption of rotation billing. The exchanges are to be divided into six groups and bills mailed to subscribers on six different dates during each month. Tolls are to be billed up to the date of the rental bill.

NOKOMIS, ILL.—Mrs. Joseph Gibbons of Farmersville has been appointed by the Mutual Telephone Co. as manager in Nokomis to succeed Miss Ellen Jones who resigned recently.

ELKADER, IOWA—The Clayton County Farmers Mutual Telephone Co., the largest mutual operating in the county, has been sold to the Northwestern Bell Telephone Co., retaining, however, its rural lines, which will be connected to the Bell exchange but through which calls will be placed on the usual switching basis. The Mutual had 120 miles of lines, serving 256 subscribers with 406 instruments. It was organized November 11, 1903, as the Community Telephone Co. and in 1921 became the Clayton County Farmers Mutual company. J. W. Meyer is secretary, and J. J. Finnegan has been secretary of the company for six years and William A. Baars, treasurer for 11 years.

FARRAGUT, IOWA—The Iowa-Nebraska Light & Power Co. has purchased the electric, telephone and ice business of the Farragut Public Service Co.

W. S. Coy, who has been in the employ of the Public Service company for several years, will be the local manager of the Iowa-Nebraska company here and the several departments of the service company will continue. It is the plan of the company to rebuild the Farragut lines later.

SWEA CITY, IOWA—The movement started last spring to consolidate 12 rural telephone lines in this community in nearing culmination and formal announcement will probably soon be made of the merger of these lines into the Swea City Rural Telephone Co. and the dissolution of the seven existing companies which heretofore have operated them. The Swea City Rural Telephone Co. has 50 miles of wire and 20 miles of posts in Eagle, Swea and Harrison township. O. L. Thoreson and Ole Quamsdale were named a committee a few weeks ago to make complete survey of the lines and report their condition prior to the final consolidation.

At the time the merger was outlined each company began a program of rehabilitation of its system, bringing all to a high standard of efficiency. The consolidation will eliminate the final overhead operating expense and give each patron more comprehensive and better service than heretofore. Until the annual meeting in March, each of the six companies will have two representatives at meetings of the newly-formed company, which will have a total of 130 miles of single wire in operation.

MILFORD, N. J.—The Van Pike Telephone Co. has sold its telephone system in Milford to the United Telephone Co. of Chicago. While the consideration was not made public it is understood to be in the neighborhood of $70,000.

The United Telephone Co., plans to entirely renovate the lines and bring the whole system up to date as soon as possible. It owns the telephone systems at Port Jervis, Matamoras, Newton, Branchville, Franklin, Barryville and Shohola.

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Kellogg drop coils, 100 ohm 35c ea., 500 ohm 45c ea., 1000 ohm	.55
Dean 3-bar 1000 or 1600 ohm Bdg. desk set with inside connection signal set @ $9.00—4-bar $9.50—5-bar @	10.00
Kellogg No. 28 3-bar 1000 or 1600 ohm Bdg. desk set with inside connection signal set @ $10.00—4-bar $10.75—5-bar @	11.50
Kellogg No. 97 C. B. desk sets with No. 404 Straight line steel signal sets @	7.00

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FOR SALE—During November—Monarch compact wall type telephones, 3-bar 1000 ohms @ $8.00; 4-bar 1000 or 1600 ohms @ $8.50; 5-bar 1000 or 1600 ohms @ $9.00 each. Monarch Desk telephones, 3- and 4-bar 1000 to 1600 ohms, $8.50 to $9.25 each. Thoroughly Rebuilt and Refinished. Guaranteed to look and work as good as new. Dyvig Electric Shop, Inwood, Ia.

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